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Bell Telephone MAGAZINE

AUTUMN 1956

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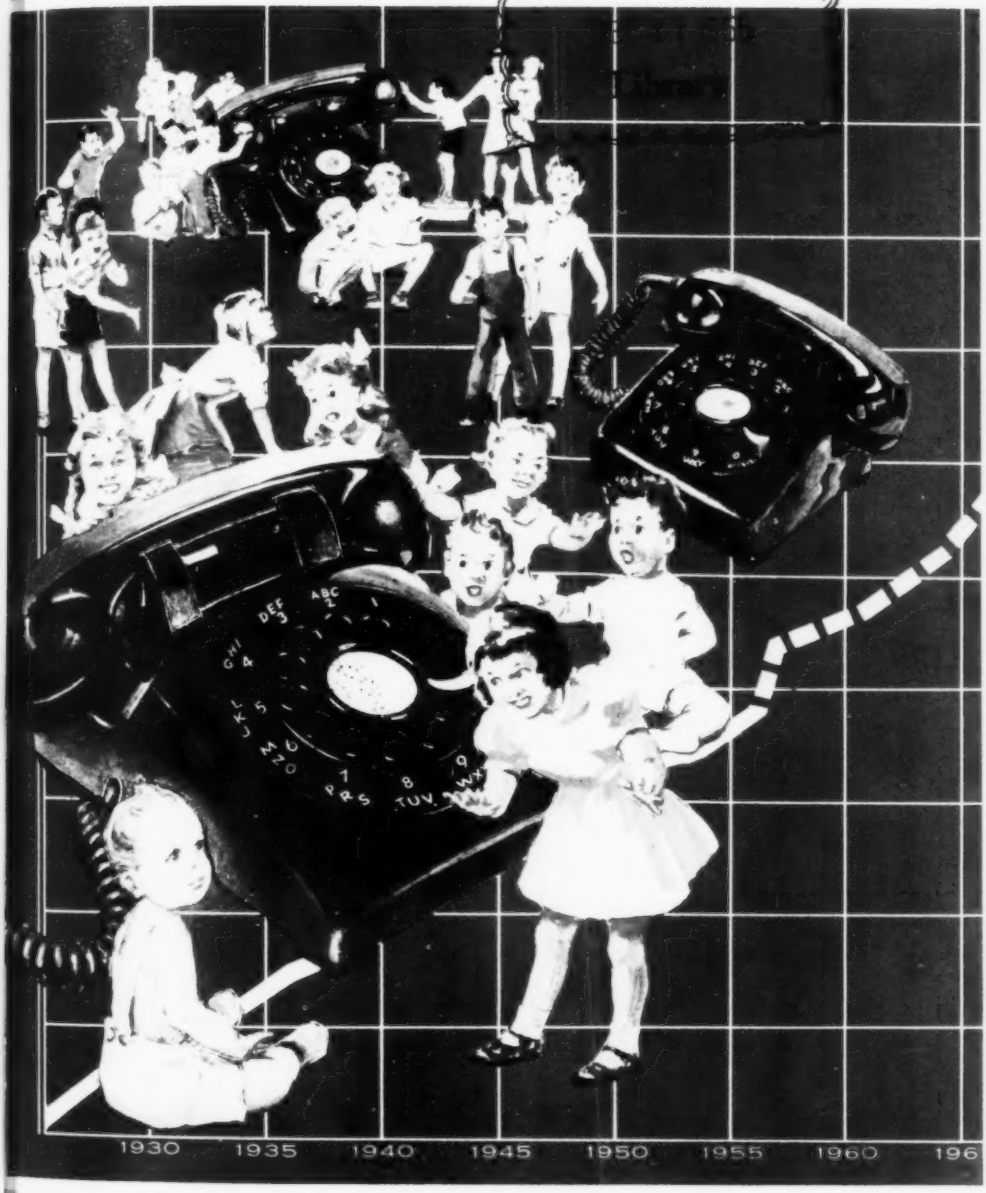

XUM

VOLUME XXXV NUMBER THREE AUTUMN 1956

Bell Telephone Magazine

A non-technical review, published quarterly to give Bell System management people a broader view of the history, objectives, operations, and achievements of this business than they might attain in the course of their day-to-day occupations, and an added sense of participation in the problems and accomplishments of our nation-wide public service.

Cover: "Upward Curve." Painted for this Magazine by *Thore Asplund and Vincent Trotta*

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A MEDIUM OF SUGGESTION and A RECORD OF PROGRESS

JUDSON S. BRADLEY, *Editor* SALVATORE J. TAIBBI, *Art Editor*

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FREDERICK R. KAPPEL, *President* S. WHITNEY LANDON, *Secretary* JOHN J. SCANLON, *Treasurer*

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Frederick R. Kappel

Frederick R. Kappel Is New A. T. & T. President

FREDERICK R. KAPPEL, president of the Western Electric Company, was elected president of the American Telephone and Telegraph Company on September 19. He succeeds Cleo F. Craig, A. T. & T. president since 1951, who was elected chairman of the Board of Directors.

Mr. Kappel has headed the manufacturing unit of the Bell System since January 1, 1954. Previously he had been A.T.&T. vice president, first in charge of the Long Lines Department and then of Operation and Engineering.

WHEN MR. KAPPEL started as a groundman with the Northwestern Bell Telephone Company, in 1924, he considered the work temporary—a summer stop-gap job in his native Minnesota until he could report to a power company in the East. He had just been graduated from the University of Minnesota with a Bachelor of Science degree in electrical engineering. But by fall of that year he was knee-deep in telephone work; he never did get around to that power job.

In the next few years he held many assignments in the plant, engineering, and commercial departments – all in Minneapolis. Ten years after he had joined the Bell System, he went to Omaha as plant engineer of the Nebraska-South Dakota Area, and three years later he was plant operations supervisor on the staff of Northwestern Bell at Omaha. In 1939 he became assistant vice president of operations, and three years later he was elected vice president of operations and a director of the Northwestern Bell Telephone Company.

He came to A. T. & T. in January, 1949, as assistant vice president in the Department of Operation and Engineering. In February of that year Mr. Kappel was elected vice president of the Long Lines Department. In November, 1949, he returned to the General Departments as vice president in charge of Operation and Engineering. He remained in this post until he became president of Western Electric Company on January 1, 1954.

When he became head of the Bell System's manufacturing unit he said, "In an enterprise as big and varied as this one is, no one person can know all the answers. Certainly I don't. Working together, though, each one of us contributing the best of what he knows, we can collectively come up with the best answers to the problems that confront us. The answer, then, lies in people—in their working together coöperatively and creatively. It's my job to foster an atmosphere in which that can happen."

Mr. Kappel received the University of Minnesota "Outstanding Achievement Award" in 1954, just 30 years after he was graduated from the university. He is a fellow of the American Institute of Electrical Engineers and a member of the Triangle, Eta Kappa Nu, and Phi Sigma Phi fraternities.

Mr. Kappel was born in Albert Lea, Minnesota, in 1902. He married Ruth Ihm of St. Paul, Minnesota, in 1927. They live in Bronxville, New York, and have two daughters, Carolyn Elaine, a graduate of Carlton College, and Kathleen Marjorie, a freshman at Ohio Wesleyan.

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Cleo F. Craig Is Made Chairman of the Board

CLEO F. CRAIG, president of the American Telephone and Telegraph Company, was elected chairman of the Board of Directors on September 19. He is succeeded as president by Frederick R. Kappel, who had been president of Western Electric Company.

Mr. Craig started his telephone career as an equipment man in St. Louis in 1913. He rose through various positions, primarily in the plant department of Long Lines, until he became vice president in charge of Long Lines in 1940. The following year he came to the General Departments of A.T.&T. and served at different times as vice president in charge of Personnel Relations, Operation and Engineering, Revenue Requirements, and Finance. He was elected president of A.T.&T. on July 2, 1951.

CLEO F. CRAIG has risen through the ranks in the traditional manner of telephone executives. Throughout his career he has shown a ready knack for tackling a new job, reducing it to the basic elements, and moving quickly with his associates to get done what needed to be done. He has a talent for carrying on discussions of complex subjects, embracing many detailed facts and figures, without apparent effort or hesitation, and without referring to notes. He is a friendly man with a fabulous capacity for work and a wonderful memory.

Mr. Craig's telephone career began in 1913. Fresh out of the University of Missouri with a degree in electrical engineering, he got his first job with A.T.&T. in St. Louis, as an equipment man at $15 a week.

He'd had another job offer – from a Utah electric power company – but two days before he was to leave, Mr. Craig received a telephone call from St. Louis. Would he be interested in a job with A.T.&T.? He quickly said "yes"; it meant he could stay in Missouri near his home.

At the end of six months he was made a line inspector at Kansas City with a raise in pay to $18 a week. With this assurance of a good start he married Laura Heck, his home-town sweetheart. He returned to St. Louis in 1917, where he worked his way up to become district plant superintendent. He went to Long Lines headquarters in New York as plant accountant in 1922. The following year he was promoted to construction supervisor, and two years later went to Atlanta as division plant superintendent for Long Lines.

In 1927 he returned to New York to be special representative in the A.T.&T. general departments. He was named general manager of Long Lines in 1933 and in 1940 was appointed vice president in charge of the Long Lines Department.

The following year he was appointed vice president of personnel and headed that department for the next seven years.

In 1948 Mr. Craig was appointed vice president of the O.&E. Department and at the same time was asked to head up the organization working on revenue requirements. In 1949 he took over his fourth vice presidency, in charge of A.T.&T. finance, while retaining his previous assignment with respect to telephone rates. In 1951 he was elected president. He has been a director of A.T.&T. since 1949.

XUM

Cleo F. Craig

High birth rates, growth in life expectancy, social changes, and migration of population are strong influences affecting telephone expansion

PEOPLE AND TELEPHONES—MORE AND MORE OF BOTH

ALEXANDER L. STOTT

Comptroller, AMERICAN TELEPHONE AND TELEGRAPH COMPANY

IN RECENT YEARS the telephone business has grown about twice as fast as the nation's economy, and all signs point to a continuance of this rapid growth if we are to meet the public's increasing demands for our services. This is not an unusual condition, however, because for many years our business, responding to people's needs for telephones, has grown more rapidly than the population or the economy.

Many factors are involved in this increasing demand for telephone service. The constant improvement in the quality of the service itself is one, as are its widening scope and relative low cost. The rising standard of living and the redistribution of income in the past two decades mean that more people are able to afford the best service we can provide. Also, many families which had to double up with relatives during war years have been establishing homes of their own which require telephone service. And Americans are great talkers and want more and more of our best services.

Of great importance too in the planning and engineering of the telephone facilities of the future is the factor of population trends. For this reason, all Bell System companies regularly make careful studies of the forces which influence the growth and movement of population in their territories.

Elements of Population Growth

IN THE YEAR 1955 the population of our country increased by 2.8 million people—a near-record growth. Births, at nearly 4.1 million, were at a record level. This dynamic growth shows no signs of slackening, with the result that today our population is 169 million people and may well increase to 192 million by 1965. But these figures, impressive as they are, form only a small part of the broad picture.

In studying population trends, we must look at relatively long periods of time—and look backward as well as forward. Birth and death rates in the past have played a particularly significant role in setting the stage for the problems of today and the future. We now realize that the low birth rates of the 1920s and early 1930s, together with the "baby boom" of the war and post-war years, have caused many of

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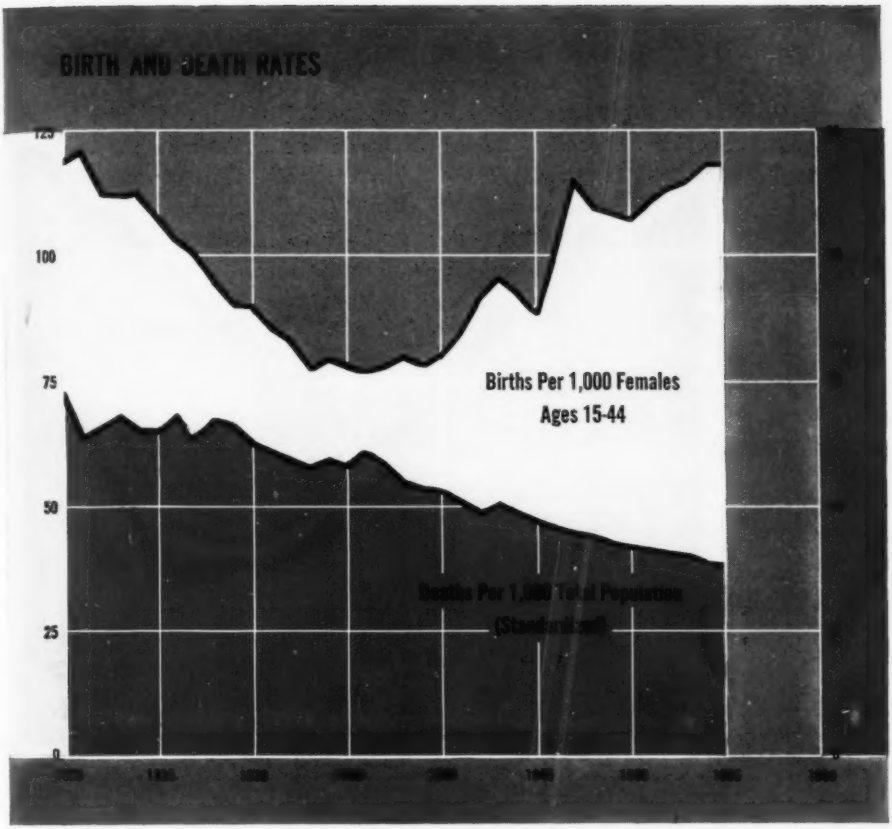


Chart One

today's more difficult population problems. During the 1920s and early 1930s there was a steady decline in the birth rate as measured by births per thousand females in the child-bearing ages, 15 to 44. The late 1930s saw a dramatic reversal of this trend, and since then the birth-rate curve has continued to climb, as shown on Chart 1.

Many people do not appreciate the magnitude of the decline in death rates which has been taking place and the extent to which it has contributed to population growth and caused many of the social and economic problems we now face. The fact that more people are living to older ages naturally increases our population, and it changes the age composition too.

Since 1920 there has been a remarkable decline in death rates. Chart 1 shows this decline on the basis of weighting the mortality rates of each age group by the percentage of the population in that group in the year 1940. Simple death rates for each year would tend to obscure the true mortality trends because the proportion of older people in the population has been steadily increasing throughout the period.

If we look back over the longer period beginning with 1900, we find a reduction in mortality rates which in any other century would have been considered little

short of miraculous. In 1900 the life expectancy of a new-born child was about 47 years; today his life expectation is nearly 70 years. Millions of people are alive today only because of the tremendous strides made in the extension of human life.

Of course, the greatest successes have been in preventing deaths in childhood. Typhoid, scarlet fever, diphtheria, and many other diseases have nearly disappeared. Tuberculosis and polio are, we hope, on the way out as killers. As the population has outlived these diseases, however, it has reached older ages when chronic and degenerative diseases are important killers. Cancer and diseases of the heart and circulatory system—and, let me add, accidents—are on the rise. But an

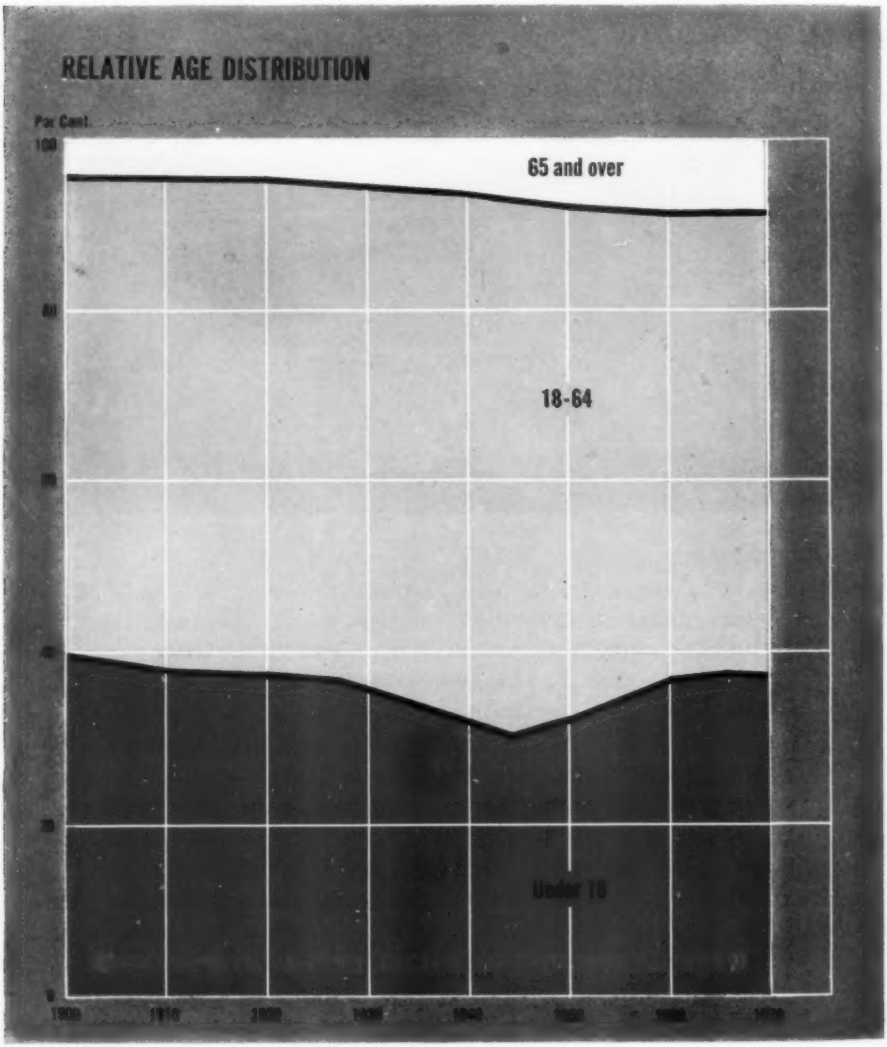


Chart Two

army of technicians is working on these problems, and the trend of mortality continues downward.

As a result of the reduction in mortality rates over the past half century, the life expectancy of our 1950 population has been increased by some 1.1 billion man-years. In other words, if the mortality rates of 1900 were still in effect, the expected future lifetime of our 1950 population would have been some 1.1 billion man-years less than under present-day mortality rates. These added years of life are so vast as to defy the imagination. Their implications for the country in terms of social and economic gains, and problems too, are enormous.

The lower mortality rates, as I have said, have resulted in a far higher proportion of older people in our population than was formerly the case. In the first half of this century, the number of people 65 years of age and over quadrupled while the number under 65 about doubled. The proportion of older people in our population is expected to continue to increase for many years in the future, so that increasing attention must be given to geriatrics and the social problems created by our aging population.

In considering our population growth, it should be remembered that for many years immigration from abroad was one of our most important population builders.

Since 1920, however, restrictive laws have cut sharply into the importance of this population stream. In the year 1955, for example, the net gain from the excess of immigration over emigration amounted to only about a quarter of a million people—a mere fraction of the explosive population growth of our times.

The Work Force and the Dependent Ages

THE RECENT HISTORY of birth and death rates has created a much changed age distribution of the population of this country, particularly as between the working and the dependent age groups.

As a result of the decline in birth rates during the 1920s and early 1930s, the proportion of the population under 18 years of age dropped steadily to a low point in 1946 of only 30% of the total population.

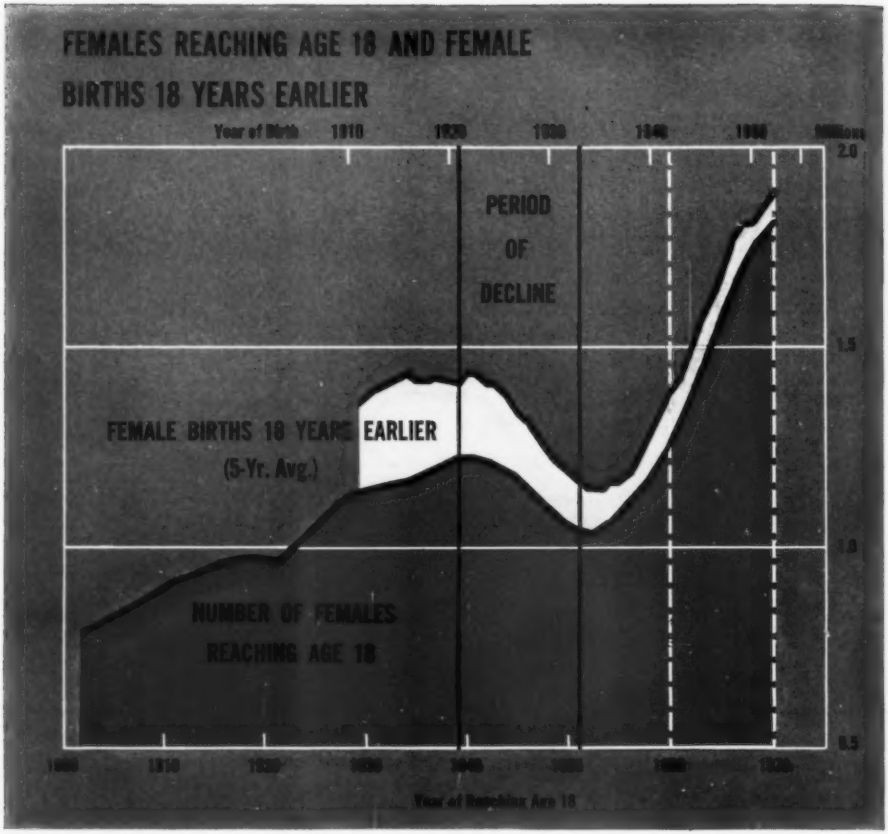


Chart Three

The proportion of the population under 18 has risen gradually since then and should continue to rise for almost a decade, reflecting the sharp increase in birth rates since the late 1930s. We have already observed that the rapid increase in the proportion of the population of 65 years and over reflects primarily life extension. These trends in the proportion of the population at the young and old ages are shown on Chart 2.

As the proportion of the population in the dependent ages increases, the proportion in the working ages decreases correspondingly. Therefore, for some years to come the population of working age will be shrinking relative to the dependent population. This means that a relatively smaller population at the working ages must produce the goods and services needed by the nation to continue the standard of living to which it has become accustomed. It probably means, moreover that the average output of goods and services per worker must be higher in the future than ever before merely to maintain our existing standard of living. And if we are to improve our standard of living, we must find the means to step up even more our efficiency and output through intensified

research and heavy capital investment.

Telephone companies, along with other industries, have been feeling the effects of the tight labor market—especially at the younger ages. It is some help to know that the proportion of the younger workers in the population—of whom the Bell System needs so many—seems to have passed the low point. The premium which this relatively small work force will place on new techniques, mechanization, innovation, and research, together with all the other facts of the situation, means that the telephone business, along with other industries, is facing a decade of great expansion and large capital investment.

Households

A POTENT FACTOR in building demand for telephone service is, of course, the formation of households. The record number of young people in our population and the prospect of a great flood of marriages are the most important forces now influencing household formation. I might say that we expect these forces to continue to play a vital part in the growth of the telephone business for some years to come.

To give a picture of the tremendous growth potential in households to be formed through marriages, I have taken age 18 as the time when girl children reach adulthood and start thinking about marrying. Some may think that this is a tender age for marriage: but the facts are that about 92% of all girls get married at some time in their lives; that about 85% of those are married before age 26; and that most girls marry in a surprisingly short period around age 18. So, accepting age 18 for girls as a useful benchmark of prospective marriages, let us try to see what is ahead. Chart 3 shows the number of girls reaching 18 years of age together with births of girl children 18 years earlier. The upper time scale shows the year of birth and the lower scale the calendar year in which age 18 was reached. One striking fact about this chart is the reflection of life extension to be seen in the convergence of the two curves.

The vertical section of the chart indicates the long period of decline in birth rates in the years from 1921 to 1933. Girls born in these years reached age 18 from 1939 to 1951, as shown by the lower scale. In the early 1950s the decline in the number of girls reaching age 18 halted and the curve leveled out. Then we see a steep rise which reflects the higher birth rates starting in the late 1930s—18 years earlier. This chart gives a dramatic picture of the rising level of marriages that is in prospect for the next decade or so. I emphasize that no forecast of future births is involved in this picture. All of the girls who will reach 18 between now and 1974 have already been born, so the situation is built into our present population. When it is realized that 97% of all married couples have their own households, one can imagine the tremendous potential growth in households that lies ahead and the probable effect on the telephone business.

There are, of course, other important influences at work in the formation of house-

holds. Increasingly, individuals are living apart from relatives and are setting up their own households. With social security and pensions, many older people, too, are finding it possible to maintain their own households today rather than having to double up with others or to seek refuge in "homes."

We have observed that the decade immediately following World War II was a time when many people who had been living with relatives established households of their own. This "undoubling" occurred at a time when the supply of young people reaching adulthood was decreasing. Without the households created by this undoubling, the post-war household formation would have been substantially lower than it actually was. It appears, however, that this undoubling has about run its course, making the present favorable age distribution of our population all the more important to future household formation and the growth of the telephone business.

The Movement of Population

So far, our discussion has dealt with population trends on a national basis and has indicated some of the basic forces at work

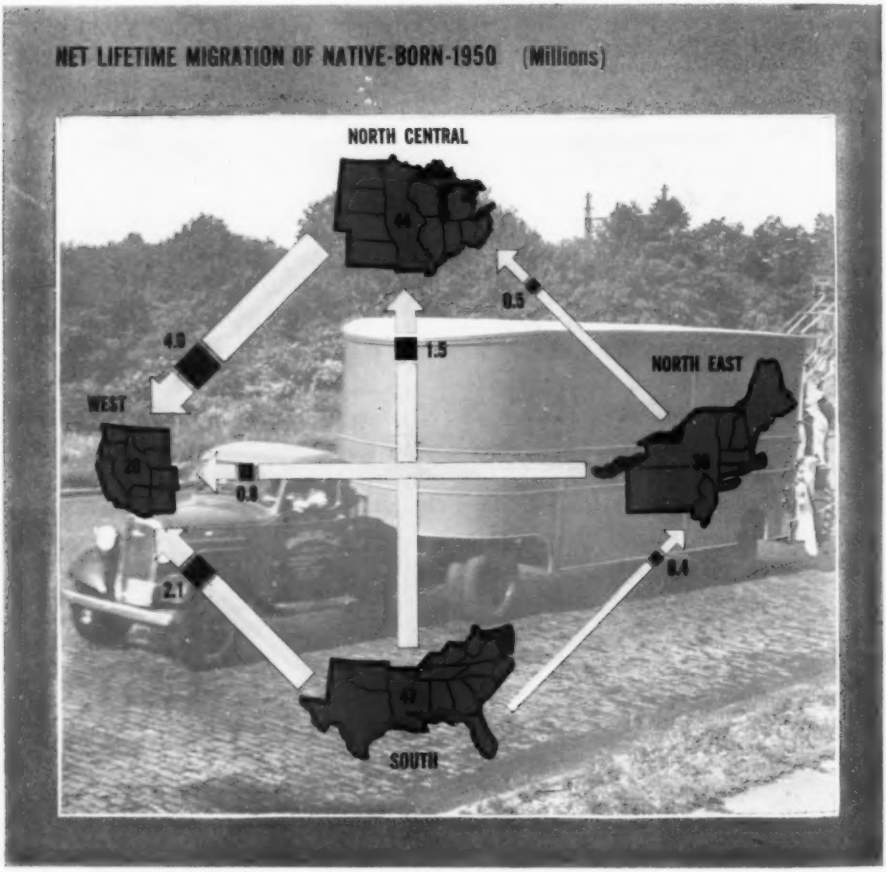


Chart Four

affecting our population. Telephone people must, of course, know about the situation in the territory of their own company. Singling out a particular area, however, immediately raises the question of migration within the United States. Everybody knows that populations grow at widely different rates in different parts of the country. These differences in growth are mainly caused by population movements and not by regional variations in birth or death rates.

Regional differences in growth can be appreciated by comparing the Census Bureau's estimates of population on July 1, 1955, with the count in the Census of April 1, 1950. During this 5¼-year period the population of the country increased 13.6 million, or 9%. But 31 states with over 60% of the 1950 population grew only 5.3% on the average and as a group absorbed only 37% of the total gain in population. The remaining 17 states grew on the average at about a 15% rate and as a group absorbed 63% of the total gain in population. Nevada's population rose 40.6% compared with a decline of 6.3% for Arkansas. Obviously, migration was a highly significant factor.

Fortunately for planners, a good bit of the migration between areas of the country follows historic trends inherited from the past. To show this movement, the country is divided into the four standard Census regions in Chart 4. The size of each area is proportional to its population at the time of the 1950 Census. The arrows indicate the direction of the net drift of the 1950 population from the time of the birth of the individuals to April 1, 1950. The squares, representing the net number of migrants for the particular migratory current, are also proportional to the number of people involved.

The marked westward drift of population is, of course, one of our strongest migratory currents, having its origin in the early days of the country. This movement, however, is only one of a number of currents. It can be seen that on balance the West gained population through migration from each of the other three regions while the South lost to the other three. The largest movement was 4 million people from the North Central states to the West, although this loss of the North Central was offset in part by the gain of 2 million people from the Northeast states and the South. Of the people counted in the 1950 Census, 4 million born in the South, or 8½% of the South's 1950 population, had moved to other regions.

The grouping of the states into the large Census regions for graphic purposes of necessity covers up many important details. For example, the chart indicates that the North Central region lost about 2 million people through migration. Actually, the five easterly states of this region gained 0.7 million while the seven westerly states lost 2.7 million, or about one person for each five of their 1950 population. A net

migration of some 6.9 million people is shown on the chart to the western states. About 81% of these people, however, went to the three Pacific states, and 63% to that domestic Mecca—California.

The Trek to the Suburbs

EVEN THE FASTEST-GROWING STATES have areas where population is static, and many of the slowest-growing states have areas of very dynamic growth. The important point to telephone people in considering the growth of different areas of a state is that for some years growth has been very largely concentrated in suburbs around the edge of large cities — not within the "city limits." Such areas around big cities are aptly called "urban fringes" by the Bureau of the Census, which defined these suburban areas for the first time in the Census of 1950, and found that they slightly exceeded the areas of the cities themselves. The suburban areas were, of course, much less densely settled than the city proper. The combined city and its urban fringe is called an "urbanized area."

At the 1950 Census, some 21 million people were living in the urban fringes of the 157 urbanized areas, or about 30% of the total population in such areas. Two-thirds of these people lived in 1,316 small incorporated places, with an average population of about 10,000, while the other third lived in unincorporated territory. Nearly three-fourths of our urban population lived in urbanized areas.

The territory of the urban fringes expands with increasing population, whereas growth of central cities involves cramming more people within existing political boundaries. Since only one survey of the urban fringes has ever been made, it is obviously impossible to measure past or present growth of the suburban population. We know, however, that suburbs have been growing on a vast scale in the period since World War II. Many factors are responsible. In the first place, mechanization and consolidation of farms have reduced the need for labor in the open country, whereas the demands of industry have tended to concentrate population in urban areas. Mass-produced low-cost housing, low down-payment mortgages and Government guarantees have made home ownership in the suburbs not only possible but financially attractive. Large shopping centers have grown up in the suburbs where the housewife can find stores, markets, theaters, banks, hospitals, and many other facilities to meet the family needs. And automobiles, buses, and fast

commuter trains make it convenient and easy to live far from work and to place factories on cheap land in the outskirts of urban areas. So it seems that the suburbs are, of necessity, here to stay and their rapid growth will undoubtedly present many problems to telephone people for years to come.

Adding It All Up

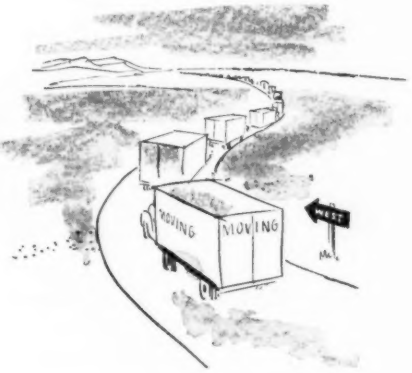
ALTHOUGH THE TELEPHONE BUSINESS has grown over the years much more rapidly than the population of the country, telephone growth and development are nonethe-less closely related to population growth.

The population of the Nation is now about 169 million people and is expected to increase to about 192 million by 1965. Many of the country's most pressing population problems arise from the era of steadily declining birth rates of the 1920s and 1930s and the "baby boom" of the war and post-war years. Reduction in mortality rates, too, has brought great social and economic gains but has created many new problems.

Over the next decade the increase in the population of working age will not keep pace with the rapid growth of young and old people, i.e., the dependent groups. If we are to maintain and improve our standard of living with a work force of relatively smaller size, the average output per worker must be substantially increased. To do this job, great emphasis must be placed on research, new techniques, mechanization, and large capital investment.

Geographic rates of growth will vary markedly in the future, mostly along historic lines. Of special importance to telephone people will be further expansion of suburbs, with smaller growth in outlying areas and within cities.

Today we have a record number of young people in our population. For some years to come these youngsters will be reaching adulthood in large numbers and will be marrying and establishing households of their own. They will want vast numbers of new telephones with the best service that we are able to provide. All in all, this picture is most favorable for our industry.



Telephone buildings reflect architectural skill in combining space for equipment and people with exterior design which harmonizes with surroundings

ARCHITECTURE OF TODAY'S TELEPHONE BUILDINGS

HOWARD E. PHILLIPS

Building Engineer, DEPARTMENT OF OPERATION AND ENGINEERING, A. T. & T. CO.

TELEPHONE BUILDINGS, whatever their destined use, are built to architectural specifications which do more than simply provide satisfactory shelter for people and equipment to perform the services called for at a given location. They must do that, of course, at reasonable cost and with recognition of future needs as well as present. Such buildings must, additionally, reflect in their careful planning and substantial character something of the Bell System's stability and of its regard for the convenience and the comfort of its workers and—where they are concerned—its customers.

Telephone buildings must evidence another quality above and beyond these practical ones. For the building is the physical manifestation which most clearly associates the telephone company in every instance with the community it serves. And so, by the adaptation of the structure to its surroundings – be they industrial, commercial, residential, or rural—the telephone company demonstrates acceptance of its place and responsibility and a regard for public approval.

Changes have taken place in our way of life, along with a rapid advance in the building industry in recent years, to bring about what is known today as modern architecture. Many centuries ago the Greeks and Romans had to rely largely on stone as a building material, and were limited to "post and lintel" construction. Today, with the use of steel and concrete framing and other materials, we can build longer spans and taller buildings and get away from the massive appearance which was a necessity in the day of the Parthenon. Modern or contemporary architecture, however, even though simple, must still be treated as a creative art. Just as the classical architecture of many hundreds of years ago required proper proportions, masses, materials, and colors, so too does modern architecture. Some examples of contemporary architecture in telephone buildings are shown in the following eight photographs.

There are some locations, of course, where a traditional style typical of the area is desirable. But the trend today is toward contemporary architecture—and, done well, it can be attractive for a long time. Yet we don't want to do something new just because it is "current trend". Too often a

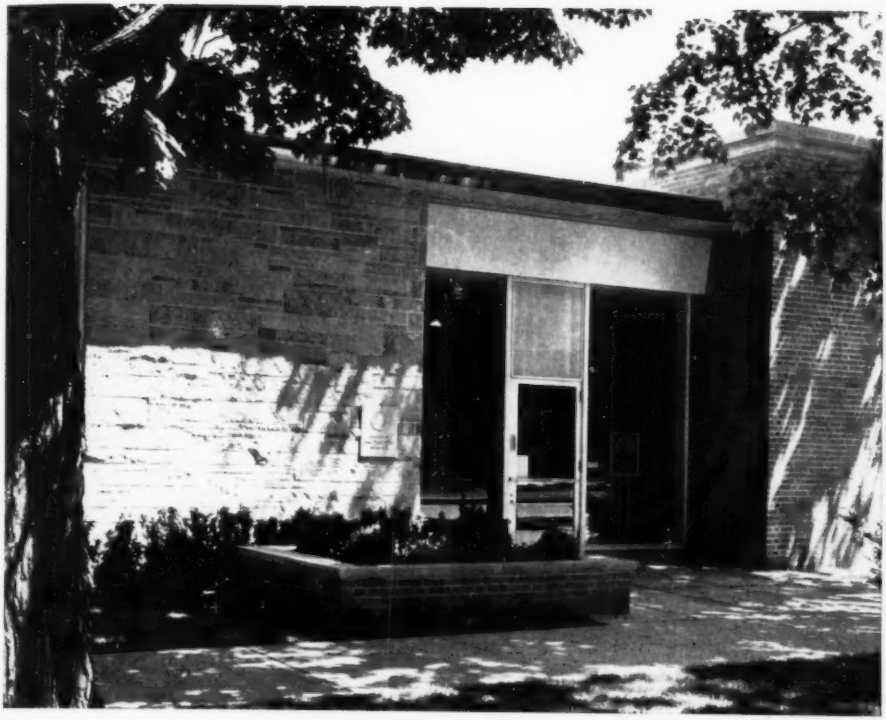
Contemporary architecture: appropriate, useful, attractive

building becomes dated for the time in which it was built. The picture on page 149 shows a telephone building built in the mid 30's which is modern enough to have been built yesterday; on page 150 is another building completed in the 30's which appears dated. To see how easily this can happen, all you have to do is to look around at the buildings near you in the typical city of today. There appears to be little need for eccentricities in architecture or spectacular buildings in the Bell System. Yet this should not restrict an architect from doing an attractive job for a purely functional building if it is appropriate for the neighborhood and has been planned and designed to provide necessary space requirements.

There are many attractive telephone buildings throughout the United States and Canada, but the effort is always to do better. Telephone buildings should not be monuments, and they should avoid luxury and even the appearance of luxury. Actually, good design can be achieved without extra cost, and some of the most attractive buildings are the simple, streamlined ones already referred to.

A crossbar office in a large suburban communitu

A central office building and business office



Entrance

A central office in a small community

A crossbar office in a big city

An accounting building in a mild climate

A "modern" building built in the 1930s

Landscaping and Site Considerations

THE ONE COMMENT heard more than any other about the design of telephone buildings is with respect to landscaping and to fitting the building to the site. This question has come up again and again in discussions with architects and in surveys made to find out what people think of telephone buildings.

At the recent Bell System Building Engineers' Conferences, Mr. Ralph Walker, of Voorhees, Walker, Smith, and Smith, A. T. & T.'s consulting architectural firm, said: "... as the city spreads and the architecture inclines to be more impersonal, that especially on suburban sites (and there are going to be more of them) larger plots be purchased than may seem immediately necessary and that simple and good landscape character be developed for telephone buildings. There is an amazing development in American life and that is the continually growing interest in better landscaping. The motor parkways in and around New York and other cities are well known examples. When you consider that, relatively, the cost of suburban land is generally reasonable, that maintenance charges are small indeed when contrasted with the enormously greater costs found naturally elsewhere in the System, and the possible return in good public relations, the effort would seem worth while. It would, therefore, seem to me that a truly great corporation can well be able to pay for an increase of the beauty in the environment of its buildings."

Exterior Colors and Materials

ONE OF THIS COUNTRY'S foremost color authorities, Mr. Faber Birren, has said about exterior colors that "Today an unoriginal and shallow courage may lead some architects to employ vivid colors. Yet such use of color is hardly to be termed good art or architecture. It is far too blunt." Mr. Birren

believes that warm colors are easily focused and seem appropriate for prominent forms and details seen at a short distance. Cool colors blend themselves to large areas and simple masses, and for consistency of mass and form a monochromatic effect – that is, with the same color – is perhaps best. Contrast may then be introduced in architectural details about the entrance or lower parts of the building.

It is possible to use too many different materials in the exterior of buildings. Often two masonry materials are ample; for example, brick with stone trim. Then obtain variety with the glass for the windows and doors and the trim (painted or unpainted) and sometimes a granite base for large buildings adjacent to the sidewalk. Often appropriate landscaping can do more for the exterior treatment than more costly efforts at ornamentation of the building proper.

Built in the 1930s, this building was adapted to its environment but now appears dated

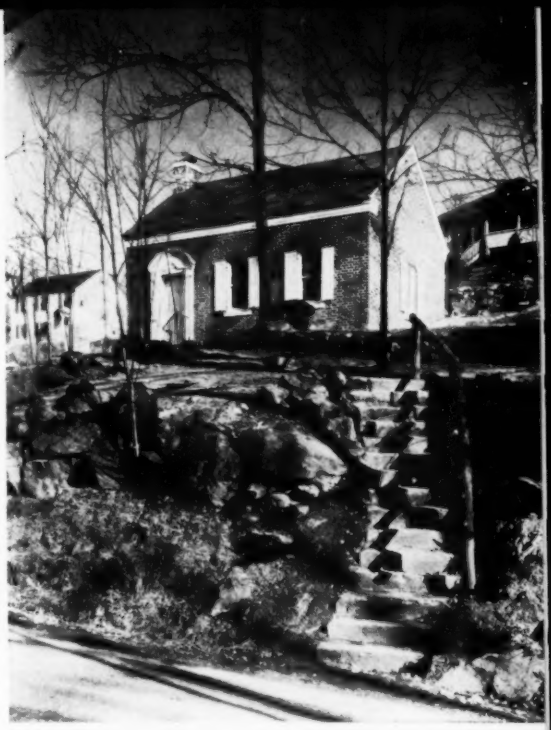
Interior Treatment

WHILE WE ARE concerned here primarily with the exterior architectural treatment of telephone buildings, the interior arrangements are equally important as they relate to the comfort, convenience, and working efficiency of employees. It is here that skillful planning can contribute much to the establishment of good working conditions that mark the telephone company as a desirable place to work.

Equipment buildings that house only a few maintenance employees naturally require quite simple provisions in the way of quarters. Buildings containing switchboards, with their attendant operating forces, and those housing sizeable groups of office workers, accounting forces, and the like, are provided with entirely adequate facilities for the use of employees: locker rooms, lounges, quiet rooms, dinettes or cafeterias as the size of the building requires, and meeting, conference, and training rooms. All of these, together with the necessary stairs, toilet rooms, and corridors, are carefully laid out for maximum comfort and efficiency. In both work and recreation areas, much attention is directed to appropriate and pleasing treatment of walls, ceilings, and floors, and to such vital features as adequate lighting and proper ventilation. Modern techniques in the use of color are effecting great improvement in the attractiveness of our interiors.

Flexibility for Growth

A COMPLICATING ASPECT of the architectural treatment of telephone buildings is the fact that the ultimate building is usually considerably larger than as first built. The building must usually be designed for expansion, either laterally or by the addition of more floors, as the needs of the locality increase, and the final building may well be two to four times the size of the first



A community dial office. Sometimes it is difficult to adapt to a site

portion. This raises problems of acceptable architectural treatment for the initial building, the ultimate building, and, in some cases, various intermediate stages. It is, therefore, quite common for the architect to prepare studies of all stages before the initial building is built, so that the architecture may be satisfactory as the building grows. Such a study is shown on page 152, where a two-story building with a one-story wing is to be ultimately expanded to four stories with a two-story wing. Particularly in the case of lateral expansion, placement of the building on the lot is affected by the plans for enlargement.

Design to Fit the Neighborhood

BECAUSE OF the varied sizes and locations of telephone buildings, it is not possible to be specific about the architectural aspects of the design; but it is obvious that

Another combination central office building and business office

Flexible for growth: Above, the original building; below, the ultimate building

A central office building of traditional architecture

A central office building with business office

XUM

telephone buildings in a commercial district require a different architectural approach from those erected in residential areas.

In a commercial district, the architectural expression may well be contemporary, and there are opportunities for use of new methods of construction and materials. Telephone equipment buildings are often difficult architectural problems because efficient equipment layouts, for which the building is but the envelope, tend toward rigid rectangular shapes whose proportions have little relationship to usual architectural concepts of mass and form. Similar problems develop in the case of large office or equipment buildings in downtown commercial districts, where the entire area of a valuable lot must be used to obtain the maximum possible floor space. Many times the building is like a big box, as shown on page 155, and it is a test of the architects' ingenuity to develop elevations which will harmonize with the surroundings.

Commercial and industrial architecture generally can be made artistic through properly studying strictly functional forms. In fact, the more attractive buildings are usually achieved by a study of the composition rather than the "trimmings". Good architecture is not usually dependent on the application of ornament for beauty. A capable architect should produce the desired effect by suitable proportions, mass, and composition, and by successful handling of construction materials. These qualities are apparent in the large buildings just mentioned.

A different approach to the problem is usually required where the building is to be constructed in a residential area. In such case, careful consideration must be given to the architectural expression in order to insure a design which will be quietly compatible with the character of the neighborhood. This is essential if the

An unattended office of contemporary design

Another central office building with a business office

A switching center and an office building in big cities

A community dial office in a residential area

building is to be liked and the company welcomed. And for more practical reasons, in many cases it is essential to obtain zoning variations or to conform to other building restrictions. Buildings in residential neighborhoods are shown on this page.

While it is not usually necessary that the building design imitate or be disguised to look like a residence, the architectural expression and character, the scale of its elements, the choice of materials, and the landscaping must be done with great care if the structure is to take its place satisfactorily in the surroundings and enhance the community. In any case, proper regard for the character of the neighborhood is essential.

One of the techniques used by architects to adapt a building to the locality is to have photographs of the neighborhood available for all persons who will pass on the architecture. These photos, of course, are invaluable to the architect in studying the exterior treatment.

The special protective requirements of the atomic age, plus the advent of new materials and techniques, pose architectural problems for the future that are both a challenge and an opportunity to the designer. Buildings on page 157 illustrate the sort of thing that has already made its appearance in telephone architecture. The upper shows the entrance to a large toll switching center that has been protected by massive steel and concrete bomb-resistive construction, and yet presents an attractive appearance. By way of contrast, the lower pictures an accounting building using a thin insulated metal and glass "sandwich" wall instead of the conventional masonry, a type of construction that offers real advantages in space conservation and speed of erection, and holds promise of becoming less costly construction in the near future. This building is a part of a civic center that is being newly devel-

Central office in a "ranch type" neighborhood

Community dial offices in residential neighborhoods

A large switching center in a bomb-resistant building of steel and concrete

An accounting building with metal and glass walls: an example of a new technique in exterior wall construction

oped with contemporary architecture predominating.

This business of designing telephone buildings that are adequate for our use, pleasing to the public, and economical to build and maintain, is a complex problem. It calls for a high order of architectural skill combined with an uncommon amount of common sense and perception. The Bell System has many notably successful examples, and the standard is steadily improving. As the public sees our buildings, and thereby has opportunity to form—we hope—good impressions of the System, these people neither know nor care what produced those impressions: whether it be good mass and proportion, dignified treatment, a sense of fitness for the surroundings, or what. But when they drive down the street and find that the whole area is more harmonious and attractive, a little bit better, because a telephone building is there, then an earnest desire has been achieved.

XUM

When the Elephant visited the Cow Palace, the telephone company's excellent arrangements and willing service generated an important by-product of good will

COMMUNICATIONS FOR A NATIONAL CONVENTION

GEORGE M. FOSTER

Public Relations Director, NORTHERN CALIFORNIA AREA, THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY

The quadrennial phenomena of national political conventions impose ever greater demands for communication facilities on the Bell System, and offer corresponding opportunities to render an essential service to news organizations and thus to the American people. Four years ago the issue of this Magazine for Autumn 1952 described how the Illinois Bell Telephone Company handled the situation in Chicago. This year's Republican Convention was the first national political convention on the Pacific Coast since 1920, and the following account of how The Pacific Telephone and Telegraph Company met the challenge in San Francisco gives still another view of the way an operating unit of the Bell System organizes to care for the reporting of events of vast importance occurring in a short time. EDITOR

WHEN THE Republican National Convention came to San Francisco's Cow Palace last August 20-24, Pacific Telephone faced the largest special service job it has ever attempted. Not since the Democrats met in 1920 had there been a national political convention in the West. Experience gained 36 years ago was small help in the communications needs of today's busy modern world.

The surge of over 2,600 delegates and alternates and several times that many relatives, associates, and just plain helpers presented enough of a communications problem in itself, but in addition, we had the visit of a President of the United States and all the demands made necessary by his "Traveling White House." And this convention was carried over telephone company facilities to an estimated audience of 90 million throughout the nation, plus radio networks carrying it to still other millions.

Most of these demands were anticipated months ago, when interdepartmental teams of Pacific Company people sat down to plan the job ahead. No one thought it was going to be easy. But a national political convention doesn't come along very often and we wanted to do the

At the Message Center in the Cow Palace, telephone girls from all departments took incoming calls for convention delegates

best job we could, when the eyes of the nation became focused on San Francisco for those four hectic days in August.

The Cow Palace, as many who saw it or heard it described on TV know, is a huge structure several miles south of downtown San Francisco in a small valley. Its chief advantages are its size, adaptability, and the area of its parking facilities. But immediately apparent was the fact that although many horse shows, live stock exhibits, and major sporting events had been held there since the 1940's when it was built, few of them demanded a really enormous capacity of telephone facilities.

Problems arose that taxed the ingenuity of management. Because many of these demands had never been encountered before, new solutions had to be found. For example, with network television coverage a requirement, company engineers and plant men had to devise a solution for line-of-sight transmission normally impossible because of the way the Cow Palace is pocketed in hills. So our people constructed a temporary repeater station on a hill top, one and one-half miles away. This was connected to the Cow Palace by video cable. Television programs were then beamed from the microwave structure to downtown San Francisco and so on out to the networks.

Another problem was the number of microwave channels needed. The largest previous demand had been for four, to cover the Japanese Peace Conference held in the Opera House in downtown San Francisco in 1952. Now, however, the networks needed 40 channels. Aside from

supplying these, there was the problem of interference between them. So the engineers worked out a solution: they separated the repeaters and transmitters in buildings 100 feet apart.

THESE are only some highlights of the size of the project. Actually, a job of this sort cannot properly be allocated between individuals or departments. It was —like all telephone achievements—a matter of close coöperation all along the line. In addition to being the largest concentration of communications facilities the company had ever assembled for a public event, it also presented the opportunity for a comprehensive public relations job.

There were two fundamental problems: providing service for the delegates and visitors, and taking care of the many and varied requirements of radio, press, and television. A total of 50 working committees, under the interdepartmental steering committee, were formed to carry out the detailed planning and complete the project.

As illustrative of the magnitude, the following facilities and equipment were installed at the Cow Palace alone: 1,200 telephones, 160 pay stations, 20 PBX boards, 335 TWX circuits, 40 TV channels, 200 radio channels, 20 telephoto circuits, and 2,100 cable pairs. There were also 10 additional switchboards and countless telephones and pay stations installed in various key points such as national committee headquarters, President Eisenhower's hotel, and television network operational centers.

Most of the facilities provided for people attending regular convention sessions at the Cow Palace were concentrated at the attractively designed Bell Telephone Center. There was an attended center for long distance calls, an information counter to handle inquiries of all kinds, and

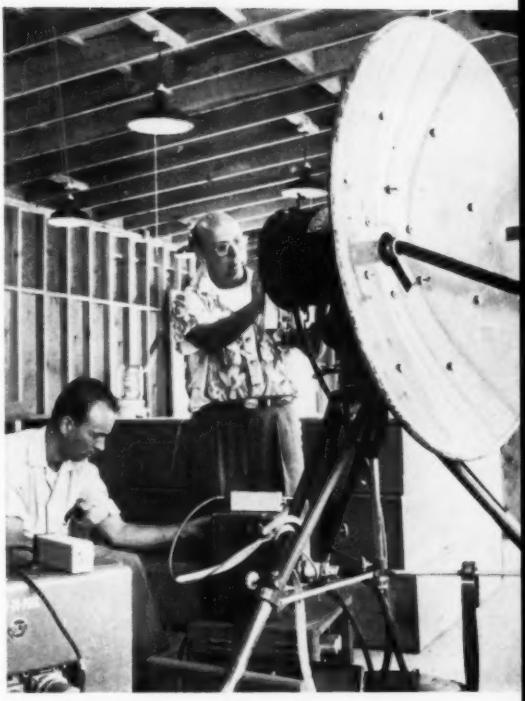
Plant men installed 46 coin telephones in a corridor near the press room in a San Francisco hotel

a message center staffed by smartly uniformed attendants who handled incoming calls for delegates and relayed messages as required. A series of booths complete with color telephones, a hard-of-hearing set, and a speakerphone adjoined the attended switchboard. Another popular spot was the television lounge, where delegates could relax and watch the convention while awaiting completion of their calls. In addition, space was provided for the Bell News Center, headquarters for telephone company news representatives who provided assistance to the working press and furnished a continuous flow of items on the telephone company's role in the convention.

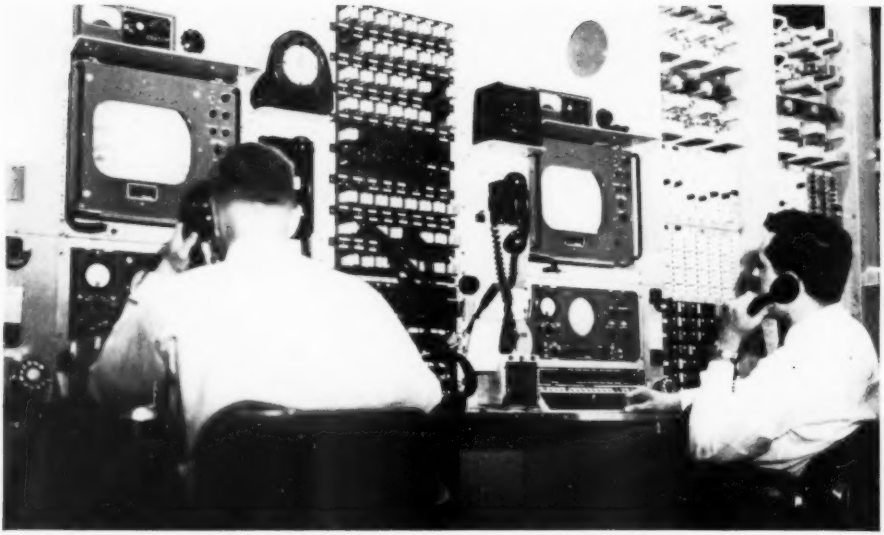
PACIFIC TELEPHONE began laying plans for the service soon after the G.O.P. announced in February, 1955, its decision to hold the 1956 Convention in San Francisco. The interdepartmental steering committee headed by C. D. Hutton, general sales manager, was formed, and subcommittees began the two-fold task of forecasting requirements and engineering the necessary service arrangements.

With far shorter than usual time limits for service of such magnitude, chief engineers compressed projects. Priority ordering and shipping arrangements for the extra cable and equipment were made with Western Electric. A special receiving warehouse was set up in a wing of the Cow Palace. To expedite the installation of equipment, Plant set up a service center there, and Commercial established an order-writing unit.

Long before the Convention began, Commercial Sales started a huge "Operation Order" in which telephone representatives reached and continued to follow up all potential telephone users to "firm up" orders for equipment. They also



Above: Microwave facilities were housed in temporary buildings atop a hill 1½ miles from the Cow Palace. Below: After the President's unscheduled "live" press conference, newspaper men went to work here.



Transmission men in a telephone company operating center monitoring television channels for picture clarity

called hotels and other commercial establishments to find out how many reservations had been made.

Engineers, meanwhile, planned a later re-use for every possible piece of equipment used for the Convention. Video cable, switchboards, microwave, everything that could be recovered for use elsewhere was engineered on that basis. It meant the saving of thousands of dollars for the company.

Other specific plans to help assure the success of the telephone company's part in the Convention began to pay off even before Convention proceedings began. Special positions designated as "Operator 480" were set up at the toll rooms, and this number was posted throughout the Bell System. The G.O.P. National Committee PBX and the Telephone Center were both given special telephone prefixes and numbers, NAtional 7-1242 and EXport 6-2121 respectively, and these were widely advertised. The approximately 400 extra coin telephones set up for the Convention also were given special prefixes, such as NIagara, TAylor, EXport, and NAtional. This served to identify these telephones for special attention by operators.

Directory and Commercial Sales performed a valuable adjunct to the over-all service job by compiling and distributing a special Convention Directory, and a daily supplement to it from August 20 to 23. It was distributed to the company's information switchboards, hotels, delegates, the press, Convention officials, and others. It became so popular that by the second day of the Convention distribution jumped from a list of 1,000 to 5,000. A telephone representative also conceived the idea of printing copies of a special directory for Mr. Eisenhower's staff, and this book was received with appreciation by Col. G. J. McNally, head of communications for the President.

To help safeguard the confidential na-

ture of the great number of telephone lines and cables serving the Convention, company special agents worked in close coöperation with the Secret Service.

THE TECHNICAL KNOW-HOW, advice, and resources of the Bell System and its associated companies, Bell Laboratories, Western Electric, and General and Long Lines Departments of A.T.&T. Co. all played a part in the furtherance of Pacific Telephone's "Operation Republican Convention."

But all the advance planning and the careful coördination to provide for the anticipated communications needs was still not enough. Many special problems arose unexpectedly and had to be solved in a hurry.

For example, President Eisenhower called an unprecedented press conference, which must be given live coverage over the TV and radio networks. No advance provision had been made for this suddenly-announced conference. But our commercial and plant people were, as usual, equal to this emergency. The networks were delighted, and millions of Americans were able to hear and see this significant spot news.

On the last day of the Convention, President Eisenhower indicated he would

At President Eisenhower's headquarters in San Francisco: Standing, left to right, officials of The Pacific Telephone and Telegraph Company and the American Telephone and Telegraph Company, and Lt. Col. G. J. McNally, head of communications for the President, beside the White House traveling PBX.

follow a different auto route to the Cow Palace from his St. Francis Hotel headquarters from the one previously announced. Two of the TV networks asked Pacific Telephone for facilities to cover the new route within two hours. The other network meanwhile asked for steady coverage from the Cow Palace and other locations.

Within the deadline, company men moved a portable microwave system from the roof of a department store to the top of a theater, and were ready to carry signals. In the interim they had (1) made transmission tests, (2) gained permission from the theater manager, and (3) called on Construction to help them string cable across a downtown San Francisco street.

Installation forces, meanwhile, were finding quick answers to problems they too had never encountered before. At the Cow Palace, we could not get in until shortly before the Convention because of a horse show there. Unavoidable delays also occurred at the hotels where the Republican committee, the press and others would be making their headquarters. So Plant designated two company offices as bases for "Operation Maneuver". For weeks ahead, Plant prewired equipment and mounted it on backboards. Then, as orders and locations for service were confirmed, the equipment was moved rapidly into place.

Orders for additional service, meanwhile, continued to come in fast and furiously while the Convention was under way.

One newspaperman ordered a straight telephone line and instrument in the press section at the Cow Palace—immediately. He received it exactly 13 minutes later.

The representatives of the nation's Fourth Estate held a party at San Francisco's Press and Union League Club, and needed more service there. But there were no facilities. So Construction moved a boom truck into downtown San Francisco. It broke concrete and set a pole in the sidewalk outside the club, so as to get vital cable inside the building.

But if Commercial, Plant, and Construction were meeting unexpected problems and overcoming them, so was Traffic. As most viewers know, a delegate from Nebraska surprised everyone, on the Convention's third day, by attempting to nominate a man named "Joe Smith" from "Terrytown," Nebraska, for the vice-presidency. Reporters, eager to score a beat, rushed to their telephones and placed long distance calls to him. Pacific telephone operators had to explain politely time and time again that Nebraska "Information" could find no such listing.

Adding excitement to the usual hustle and bustle of the Telephone Center was the appearance of such nationally known figures as Senator Knowland, Governor McKeldin, Senator Saltonstall, Constance Bennett, Glenn Ford, Irving Berlin, Ed Murrow, and the newly crowned Miss Universe.

Widespread publicity was required to let those attending the convention know of the various special services provided by the telephone company. To accomplish this, Pacific used newspaper advertising, booth cards, matchbook covers, stationery, postal cards, and telephone message forms. Pacific also printed special booklets and leaflets for distribution to delegates and to the press, pointing out where and how to utilize the services.

Press kits containing telephone news releases and photographs were distributed to the hundreds of reporters covering the convention. This kit, along with contacts made through the news center,

was given much of the credit for an impressive sheaf of favorable news clippings.

FROM THE START to the finish of the operation, every telephone man and woman involved showed a marked willingness to serve.

At the specially designed Bell Telephone Center for delegates at the Cow Palace, telephone people from all departments worked hand in hand with operators in the company's long distance offices, seeking out called parties wherever they might be and placing calls at an attended pay station.

Every possible offer to help was extended, and this included things not directly connected with telephone service. On the first day of the Convention, for instance, a delegate from South Dakota came to the center. "Our sign's broken", he said. "We've got to get it fixed quick." The center's assistant manager made a hurried trip with the sign to Plant's main frame room. Repairs were made and he returned it a few minutes later, better than ever, to the grateful man.

Telephone people don't expect thanks for a job well done. But it's nice to hear appreciation.

A letter to A. T. & T. President Cleo Craig (now chairman) on August 22 from a gentleman who described himself "a very loyal stockholder in A.T.&T. and a very proud one indeed," said in part: "As the eyes of the nation focus on our proud town of San Francisco for the Republican convention, I want you personally to know how proud I am, as a part of A.T.&T., concerning the tremendous job that is being done here in San Francisco by the Pacific Tel. & Tel."

A delegate from South Carolina spoke of all Pacific Telephone people concerned when he said, "Every time I placed a call I got fast service, and I appreciated it. But it was the way you folks at the telephone company took care of me that I'll never forget. Everybody seemed to really roll out the carpet, and from a Southern gentleman who's pretty proud of Southern hospitality, here's an invitation to the telephone folks here in San Francisco. You can be my guests down in South Carolina *any time!*"

Taking part in the ceremonies in New York in connection with the opening of the transatlantic telephone cable on September 25: left to right, Cleo F. Craig, Chairman of the Board, A. T. & T. Co.; Hon. George C. McConnaughey, Chairman, Federal Communications Commission; Frederick R. Kappel, President, A. T. & T. Co.; George L. Best, Vice President, A. T. & T. Co.; William G. Thompson, Assistant Vice President, Long Lines Department; Mervin J. Kelly, President, Bell Telephone Laboratories; and Henry T. Killingsworth, Vice President, Long Lines Department, A. T. & T. Co.

TRANSATLANTIC TELEPHONE CABLE IS COMPLETED

A NEW transatlantic telephone cable system, under construction for more than two years and inaugurated on September 25, is not only the first of its kind to cross the Atlantic, but the first underwater telephone link to span any ocean. A.T.&T., the British Post Office, and the Canadian Overseas Telecommunication Corporation are partners in the historic enterprise.

The deep-sea portion of the system was laid under the supervision of the Long Lines Department of A.T.&T. Engineers and scientists of Bell Telephone Laboratories designed and tested the system. It can carry 36 conversations at the same time. Thus it is able to handle about three times the traffic now transmitted between this continent and Great Britain by radiotelephone.

The deep-sea segment of the system extends 2,250 miles from Clarenville, a small village on the east coast of Newfoundland, to Oban, Scotland. From Oban, new trunk lines link the system to switchboards in London. On this continent, newly constructed land and water sections bring the transatlantic circuits to Portland, Me., and to Montreal, where they connect to the established American and Canadian networks.

The underwater cables that represent the backbone of the system were placed by the cableship Monarch, the largest cable-laying vessel afloat. Since cables of the design used in the Atlantic section of the system transmit in but one direction, two cables were needed to make a conversation possible. The two cables lie some 20 miles apart on the ocean floor; the southernmost transmitting from West to East and the northernmost from East to West.

Successful completion of the Atlantic

Ceremonies in New York at the opening of transatlantic radio telephone service with London on January 7, 1927. President Walter S. Gifford, seated at the head of the table, is among well-known telephone officials of that day. It is of particular interest that Mr. Gifford was present at last September's occasion also.

cable system climaxed a quarter of a century of active research in this field by communications men on both sides of the Atlantic.

The particular problem that had to be overcome was development of an underwater amplifier, or "repeater," an electrical device that would boost voice signals after they had reached the fading point along a circuit. While repeaters are relatively easy to install and maintain along land cable, the undersea cable demanded an amplifier that could:

(1) be built into the cable in such a way as to be able to pass easily through a ship's laying gear without interruption;

(2) withstand pressures of at least 6,000 pounds per square inch;

(3) operate without attention for at least 20 years.

Bell Telephone Laboratories, after years of research, perfected such a repeater, which has been under test for 15 years and in operation in cables stretching from Florida to Cuba since 1951. The repeaters, about eight feet long, appear as a slight fattening in the cable and might not be noticed by the unpracticed eye as they slide seaward from the ship's gear. To keep signals constant and clear, 51 repeaters, spaced about 40 miles apart, are located in each cable.

The repeaters were manufactured by Western Electric Company at Hillside, New Jersey, in a building that was once a bus terminal but is now one of the cleanest factories in the world. The submarine cable used in the transatlantic system was manufactured in both this country and Great Britain. The American manufacturer was Simplex Wire and Cable Co., of Cambridge, Mass.; the British, Submarine Cables, Ltd., of Greenwich, Eng.

XUM

A multitude of interests and activities enriched the inventor's life in the Capital City, which was his home for more than half his lifetime

DR. BELL IN WASHINGTON

LAURENCE M. WHYTE

Information Assistant, INFORMATION DEPARTMENT, LONG LINES DEPARTMENT, A. T. & T. CO.

This is an expanded version of an article by Mr. Whyte which originally appeared in "Long Lines Magazine" for July 1956. EDITOR

BOTH COINCIDENCE AND COMMEMORATION associate Alexander Graham Bell with the recent opening of service over the transatlantic telephone cable. The cable system uniquely follows the itinerary of his own life, in addition to completing a dream he had exactly eighty years ago.

Linked by the cable are the United States, Great Britain and Canada—the nations in which Dr. Bell lived. One of the cable terminals is at Oban, Scotland, less than a hundred miles from Edinburgh, city of his birth and home of his early years. On this side of the ocean, the Boisdale radio relay station, part of the cable's land facilities, is only thirteen miles from his summer home at Baddeck, Nova Scotia, where he died. It is also at Baddeck that the Canadian government opened the Alexander Graham Bell Museum last August, less than a week after the final cable laying.

Conversations via submarine cables were an objective of Bell and his assistant, Thomas Watson, during the early demonstrations of the telephone in 1876. Newspaper reporters were quick with publicity. Commented the Boston *Post* that autumn: "Professor Bell is continually improving his invention, and he doubts not that he will ultimately be able to chat pleasantly with friends in Europe while sitting comfortably in his Boston home."

Since the telephone worked well on various land telegraph lines for the demonstrations, it was a natural hope that a connection with one of the transatlantic telegraph cables would suddenly unite the world by voice. Watson later recorded that Bell was skeptical of any easy success, although plans were made for a test one year later, when Bell was in England. Therefore, in the late summer of 1877, Watson and an associate attempted to send speech over a shorter submarine cable to measure preliminary results. A cable from Rye Beach, New Hampshire, to Halifax, Nova Scotia, was used. Noted Watson sadly: "We had a midnight trial but not the faintest sound could be heard at either end." Further experiments in this direction were dropped.

One of many formal banquets Dr. Bell attended in Washington was this one of the National Geographic Society in 1909. Bell is at extreme right, while philanthropist Andrew Carnegie talks to New York editors by telephone. Second from left is Gilbert Grosvenor, his son-in-law, and behind Carnegie is Robert Peary, discoverer of the North Pole. (Photographs by courtesy of the National Geographic Society.)

More than three-quarters of a century were to elapse before the goal of that early test was to be realized with the official opening of the transatlantic telephone cable. Three countries were linked during the ceremony—and therein lies another coincidence. Dr. Bell had close associations with the capitals of two of them, London and Washington. He had lived and studied in the former as a young man, and then again as a young husband and an acclaimed inventor. In addition, he was a London visitor many times in later life.

The frequency of Dr. Bell's world-wide travels has, as a matter of fact, tended to conceal the strongest ties he ever had to one particular city. From 1879 until his death in 1922—more than half his life—Washington, D. C., was his permanent home. In this year of great telephonic accomplishments it seems particularly appropriate to recall this aspect of the man who made them all possible.

Bell had held Washington in special regard since his first visit in 1875, when he applied for a patent on his harmonic telegraph. At that time he met Joseph Henry, renowned director of the Smithsonian Institution, who encouraged his attempts to send speech over wires. After Bell's marriage to one of the daughters of Gardiner Green Hubbard, one of his early financial backers, and the initial success of the telephone, it was a natural place to settle

permanently. Hubbard was a noted lawyer who maintained lodgings in Washington, convenient for his cases. And the Hubbards, although of Boston, soon established a spacious residence there which they called "Twin Oaks."

In 1882 the Federal Court in the District of Columbia admitted Bell to United States citizenship (his first naturalization papers had been secured in Boston in 1874). Although a Scotsman by birth, American citizenship was very important to him. His son-in-law, Dr. Gilbert Grosvenor, recalls: "He always took great pride in the fact that he was an American by 'deliberate choice,' as he expressed it, rather than by birth."

Washington enjoyed a fabulous growth during Bell's stay. When he arrived, the population was only 147,000. By 1920 it had jumped to 437,000. It was cosmopolitan, of course, since it was the seat of government. But apart from politicians and diplomats, its private citizens were part of a swelling intellectual and cultural wave around the turn of the century. With the Volta Prize money received from the French government in 1880 for his invention of the telephone, he established the Volta Laboratory. This formalized experiments he had been carrying out in a little two-story building at 1325 L Street from the time he first moved to Washington.

The Photophone

IN ASSOCIATION with Sumner Tainter, a graduate of the same Boston electrical shop as Watson, Bell developed the photophone, a device for sending speech over a beam of light. It utilized the element selenium, which had an amazing property for the scientists of that day. This was its ability to change its electrical conductivity depending on whether or not light was played upon it.

The photophone had a mirror thin enough to vibrate with voice tones spoken into its back. On the front of the mirror a beam of light was deflected to a selenium cell arranged in a telephone circuit. Tainter took the transmitting part of the device to the top of the Franklin School, not far from the laboratory, on June 3, 1880, and spoke into the mirror:

"Mr. Bell, Mr. Bell, if you hear what I say, come to the window and wave your hat!"

The beam of light traveled to the laboratory, and the selenium cell. Bell heard—rushed to the window and waved. It was the first wireless telephone message in history! Nine years ago, on the centennial of Dr. Bell's birth, the Alexander Graham Bell Chapter of the Telephone Pioneers placed a plaque on the Franklin School in commemoration of the experiment—and it can be seen there today.

When the Volta Laboratory was established after Bell's return from France, where he had gone to accept the Volta Prize, he and Tainter were joined by Chichester A. Bell, a cousin. The disc phonograph record was a development by the trio which soon replaced the Edison cylindrical record. The Laboratory no longer exists, but from it came the Volta Bureau, an international information center on deafness, and the Alexander Graham Bell Association for the Deaf. Both are in full operation today in Washington.

Teaching the deaf, and studying all phases of deafness, was one of the subjects closest to Bell's heart. As is well known, his wife, Mabel, had been deaf since early childhood, and was very adept at lip-reading. When they attended silent movies in Washington, Mrs. Bell readily noticed that what the actors said with their lips often failed to coincide with the printed dialogue. Once they had a hearty

chuckle at a highly romantic scene, during which an actress's lips clearly chided her suitor: "Stop stepping on my toes!"

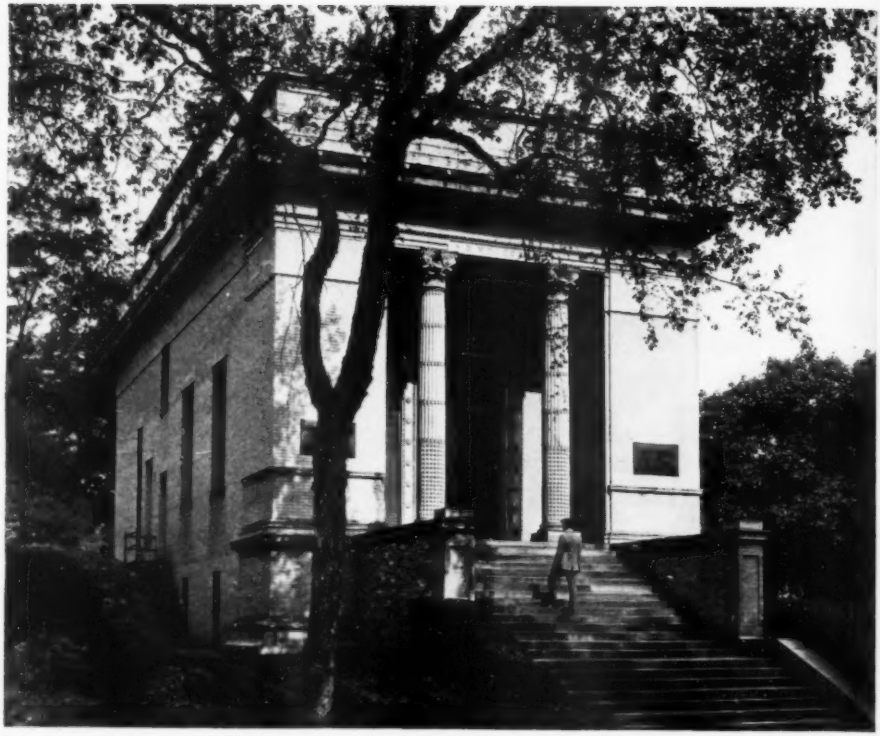
Another of Bell's interests in the Capital was the Smithsonian Institution, of which he became a regent. He was responsible for having the remains of James Smithson brought from England for re-burial (Smithson, although he donated the money which founded the Institution, died without ever seeing America).

Bell also was on the special committee which inspected valuable art treasures offered to the Institution by Charles Freer of Chicago. The collection included one hundred Whistler paintings, as well as almost priceless oriental ceramics and bronzes. Art was not one of his stronger interests, however, and to Bell the oriental *objets d'art* looked merely like "a lot of pots." Since his associates on the committee were scientists of much the same esthetic sense, Bell later laughingly credited his daughter, Marian, who had gone along on the Chicago inspection, with persuading the committee to accept the Freer collection—considered one of the world's foremost collections of Oriental art.

Beginning of the National Geographic Society

In 1888 Gardiner Hubbard signed his name to a short note that was to have great significance to himself, his son-in-law, and the scientific world. Sent to a small group of serious-minded men in Washington, it read:

Dedication of Volta Bureau, 1893. Bell's daughters are seated, first and fourth from left, with Helen Keller holding spade. Bell's mother sits behind boys, his wife stands beside her. Back row: first left is Alexander Melville Bell, his father; fifth left is David Bell, his uncle; and sixth left is A. G. Bell himself.



The Volta Bureau in Washington, to which Bell devoted the funds he received from the Volta Prize. In design it is reminiscent of the school which he attended in Edinburgh.

"Dear Sir: You are invited to be present at a meeting to be held in the Assembly Hall of the Cosmos Club, Friday evening, January 13, at 8 o'clock, for the purpose of considering the advisability of organizing a society for the increase and diffusion of geographic knowledge."

Five other Washingtonians signed with Hubbard. The meeting resulted in the formation of the National Geographic Society, and Hubbard was elected president. Original membership was 165. The first issue of the *National Geographic Magazine* came out the next year, little resembling the present magnificently illustrated periodical. When Bell's father-in-law died, in late 1897, Bell was elected president of the Society.

The man who was interested in everything factual naturally was interested in geography. He thought many other people would share this feeling if the Society's magazine presented its facts entertainingly. At that time the organization had 1,000 members and a $2,000 debt. And there was no full-time employee working on the magazine.

Bell quickly took measures to change the situation. He wrote to a friend at Amherst College, Dr. Edwin Grosvenor. Grosvenor had two sons recently out of college, and Bell offered to pay the salary of either if he came to Washington as assistant editor of the magazine. The task intrigued Gilbert Grosvenor, and the position was his at the age of twenty-three.

Young Grosvenor had the same idea as Bell about popular geography, and though his toil for the new policy was long and difficult, the public response was affirmative to an amazing extent. By 1912 membership had leapt to over 100,000, and Bell was able to address the Society in these words: "There has never been in the history of the world a scientific society that has increased in influence and power as the National Geographic Society . . . we never had to take off our hats to any multimillionaire for having endowed the Society with a million dollars; we have done it ourselves."

Besides giving over-all leadership and inspiration to the Society, Bell was an assiduous writer for its magazine. He contributed two dozen articles, ranging in subjects from the telephone to tetrahedral kites to turtle habits.

In 1899 Gilbert Grosvenor became editor of the *National Geographic Magazine*, a position he held until 1954. In 1920 he was elected president of the Society, and now is chairman of its board of trustees. Its current membership totals 2,200,000. Another prime influence in the Society has been Elsie May, Bell's first daughter, born in London in 1878. She married Dr. Grosvenor in 1900. She read magazine manuscripts, gave valuable advice, and designed the Society's official flag. In addition, she has followed her father in contributing articles.

The second Bell daughter, Marian Hubbard, was born in Washington in 1880. In 1905 she married Dr. David Fairchild, who later became head of the plant introduction department of the U. S. Department of Agriculture, was the author of hundreds of articles, and was a trustee of the National Geographic Society. The Fairchild tropical gardens in Miami, Fla., are dedicated to his memory.

Children of both daughters were soon scampering about the many-roomed Bell house on Connecticut Avenue. The first of his ten grandchildren was Melville Bell Grosvenor, who was possibly the youngest person ever to lay a cornerstone. It was for Hubbard Memorial Hall, now a wing of the National Geographic Society's present quarters at 16th and M Streets. The time was 1903, and he was an infant—but it must be revealed that he carried out the operation in the arms of his great-grandmother, Mrs. Hubbard. The task was accomplished, and Melville Grosvenor is today the Society's vice president and associate editor of its magazine. He has many memories of Dr. Bell, which bring fond smiles to him in their telling.

Ideas and Enthusiasms

It was often convenient for Bell to walk his grandson home from school, since the Volta Bureau was near the school and the Grosvenor house in back of Bell's. During a number of these walks one year, the eager youngster and the just as eager gray-bearded man laid intricate plans to live like Robinson Crusoe when they went to Canada that summer. "We'll live off what we can gather from the woods," they agreed, "build our own fire without matches, and make a raft from logs and vines."

Melville Grosvenor grins when he recalls the skepticism which the project caused among the rest of the family—and that it was only too well justified. Garbed in bathing suits for a week's stay in the wilderness, the pair soon shivered in the Baddeck temperature. The wood and moss they found were far too damp to make a fire, there were no vines to hold together logs for a raft, and it was impossible to discover anything to eat—with the exception of canned goods aboard the Bell

houseboat, to which they quickly retreated, Crusoeism abandoned.

Another Bell idea failed to attract a single member of the family. On the basis of simple logic, he decided the drinking of liquids from cups and the spooning of soup from bowls were wasteful of energy —and also a needless ordeal for his beard. He had a set of glass tubes of different diameters manufactured. These he carried in a special case in his pocket. If a thick soup was served, out came a tube with a large diameter; smaller diameters were appropriate for coffee and milk. He urged everyone to have a personal set of tubes and follow his example. The family declined, no doubt visualizing the amusement with which formal dinner guests would respond to such unique etiquette.

A Mind Alive, Alert

MANY GUESTS were invited to Connecticut Avenue, since the entire family shared Bell's enthusiasm for interesting people and interesting knowledge. An "open house of the mind" developed there, at which scientists and travelers met for mutual stimulation. The gatherings coalesced into what became known in those more formal days as "Mr. Bell's Wednesday Evenings."

Visitors never failed to receive a dramatic impression of their host on these weekly occasions. As Dr. Fairchild once described it: "You were conscious of his dominant personality the moment he entered a room; his thick gray hair curled back from a high, sloping forehead, and he had a full beard and extraordinary eyes, large and dark under heavy eyebrows. Tall and handsome, with an indefinable sense of largeness about him, he so radiated vigor and kindness that any pettiness of thought seemed to fade away beneath his keen gaze."

A typical "Wednesday Evening" was one in April, 1904, with about twenty people present. Bell had no topic of his own, but acted as a leavening agent, drawing out the more taciturn guests and politely doing the opposite for the too loquacious ones. The first talk was on destruction of algae in reservoirs, then a captain gave a "sea serpent" yarn, a professor spoke on new uranium discoveries, a process of printing without type was disclosed, and the final talk, illustrated with slides, was about a trip to Tibet. Varied fare for intellectual appetites!

Bell's appetite, for both mental and physical food, was unceasing. On the latter score, his wife tried to keep him on a strict diet. But he could never pass up pastry, whether in a shop or at the table, without a great and vocal sense of anguish. Both hungers could be satisfied simultaneously. For instance, it was not unusual for him, soon after being seated for dinner, to look around the table at his family and inquire eagerly: "Any new facts to communicate?"

If the information thus sought did not seem logical, or did not correspond to what he had studied, he readily asked: "Your authority, sir?" Then it was off to his library to consult the reference volumes and settle the point immediately.

Women and the Right to Vote

HIS INTEREST was not only in scientific matters, but in all the issues of his time, including politics. The crusade to give women the right to vote was one such issue, and Bell and his family were thoroughly affirmative. During a trip to Australia in 1910 he had found woman's suffrage operating well, and he could see no reason why this would not be duplicated here. The house on Connecticut Avenue was often filled with people interested in discussion of that subject.

Dr. Bell prepares to view a total eclipse of the sun in May, 1900, at Norfolk, Virginia. Mrs. Bell is standing beside him.

He wrote in his journal on February 28, 1913:

"Soon after nine I slipped away [from a meeting of the National Geographic Society] to be present at a meeting of suffragettes in my house—a public meeting addressed by Miss Foley. The annex room was crowded and all the chairs available in the house were brought forward and still I think some of the visitors were left standing. What interested me specially was that the ventilation was good. The subject of woman suffrage was also well ventilated, although I could make but little of what was going on, having arrived late and having to be out and in constantly receiving late comers."

A week later a majority of the Bell family lent enthusiasm (and almost their personal safety) to a Washington demonstration for the feminine cause. He recorded:

"On Monday Mabel and I witnessed the Woman's Suffrage parade from the market grand stand on Pennsylvania Avenue. It was a beautiful procession but sadly marred by the inefficiency of the police in keeping a passage open in the avenue. The dense crowds surged in upon the procession on either hand so that it was difficult for it to make any progress at all. The proximity of the crowd led to many indignities which are bitterly resented by all those who have heard of them. Elsie was in the procession in our automobile, Melville, Gertrude, Mabel, Lilian and also Barbara Fairchild. A man or men climbed up on the side of the automobile and

snatched balloons and flags from the hands of baby Barbara. The children, dressed in suffrage colors, attracted a good deal of attention and rude inquiries were directed at little Barbara to know whether she too wanted to vote, to which the little four year old replied gravely, "hey," nodding her head . . ."

". . . In spite of the bad management of the police the parade of five thousand ladies through the streets of Washington presented a most impressive appearance, and exhibited well the great earnestness of the advocates of woman's suffrage."

A number of years passed before the object of this parade was achieved. Fortunately, Bell lived long enough to see the 19th amendment added to the Constitution.

He did not live to enjoy the benefits of modern air conditioning, and this was regrettable because he threw himself into the matter of Washington's oppressive summer heat with all the conviction and ingenuity for which he was noted. When his presence in the Capital was necessary during a part of that season, his personal battle never slackened. At first he tried to stay inside an ice-cooled tent in his study. That didn't work.

His final victory involved a radical tactic. When it was put into effect, distinguished guests who came to see him were directed to his residence's swimming pool. They found the water had been drained from it, and as they approached the deep end they could feel the air growing cooler–a veritable "air conditioner." And there sat Dr. Bell at his desk, calmly dictating to his secretary!

Beyond doubt, Alexander Graham Bell lived his own life in Washington the way he wanted, and thought his own thoughts. But in a host of fields, his family, his friends, his chosen country – and indeed, the world–were better off because of that.

FROM THE TOP FLOOR OF THIS BUILDING
WAS SENT ON JUNE 3, 1880
OVER A BEAM OF LIGHT TO 1325 L STREET
THE FIRST WIRELESS TELEPHONE MESSAGE
IN THE HISTORY OF THE WORLD.
THE APPARATUS USED IN SENDING THE MESSAGE
WAS THE PHOTOPHONE INVENTED BY
ALEXANDER GRAHAM BELL,
INVENTOR OF THE TELEPHONE.
THIS PLAQUE WAS PLACED HERE BY
ALEXANDER GRAHAM BELL CHAPTER
TELEPHONE PIONEERS OF AMERICA
MARCH 3, 1947.
THE CENTENNIAL OF DR. BELL'S BIRTH.

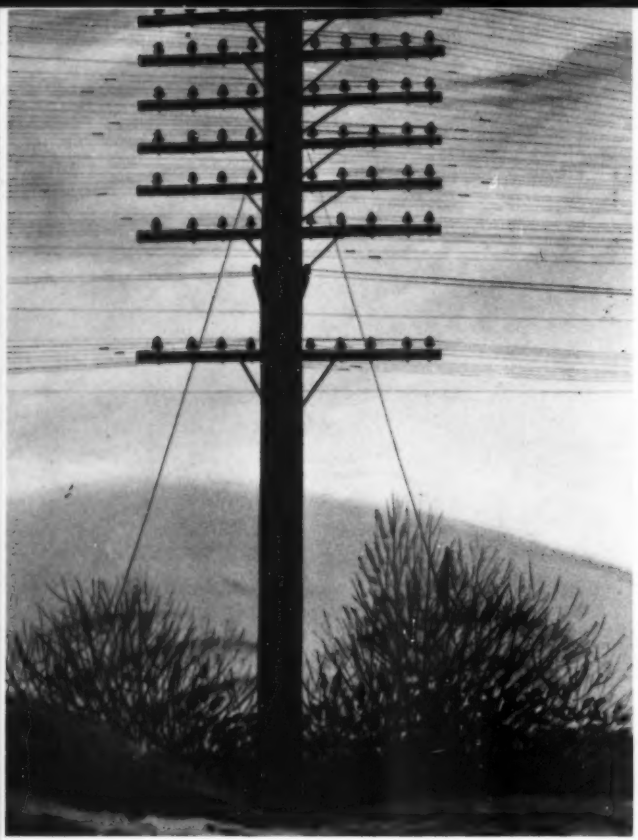
This plaque is on the Franklin School in Washington.

ALL THINGS TO ALL MEN

The telephone "sat for its portrait" to 50 well-known artists not long ago: members of the noted Society of Illustrators, who were asked to interpret, each in his own way and without sponsor prompting, what the word telephone *means to him. There were, of course, 50 different outcomes—proving, probably, that the telephone means all things to all men. The pictures themselves have been exhibited and reproducd in many places and ways, and are becoming quite well-known. We bring some of them to you here just because they are colorful or interesting or amusing—or all of those pleasant qualities.*

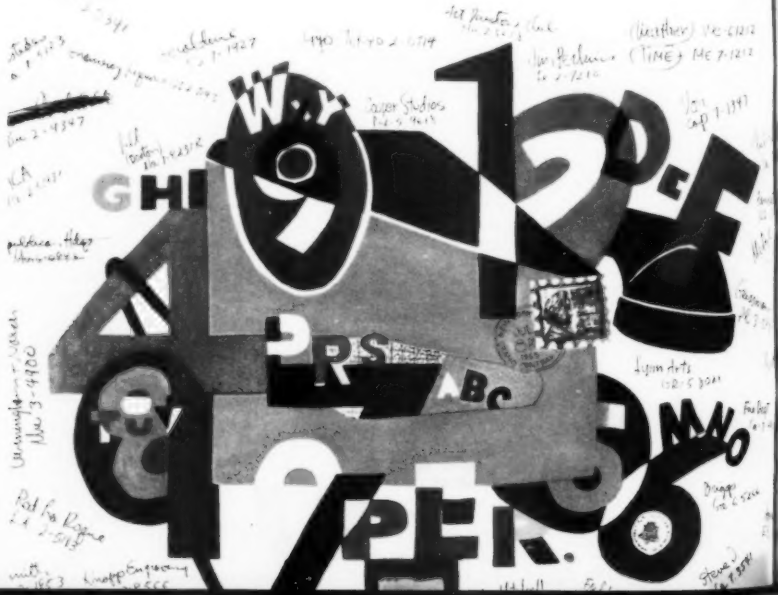
Puppy love, of a sort—and no more sensible than the other kind, either. It seems to say, though, that the telephone enters into the individual's affairs at an increasingly early age. Artist: Gyo Fujikawa.

1A



Highways, artist Stevan Dohanos calls this portrait of a familiar object, which sums up in wood and wire and misty distance all the magic which inheres in the word *telephone*.

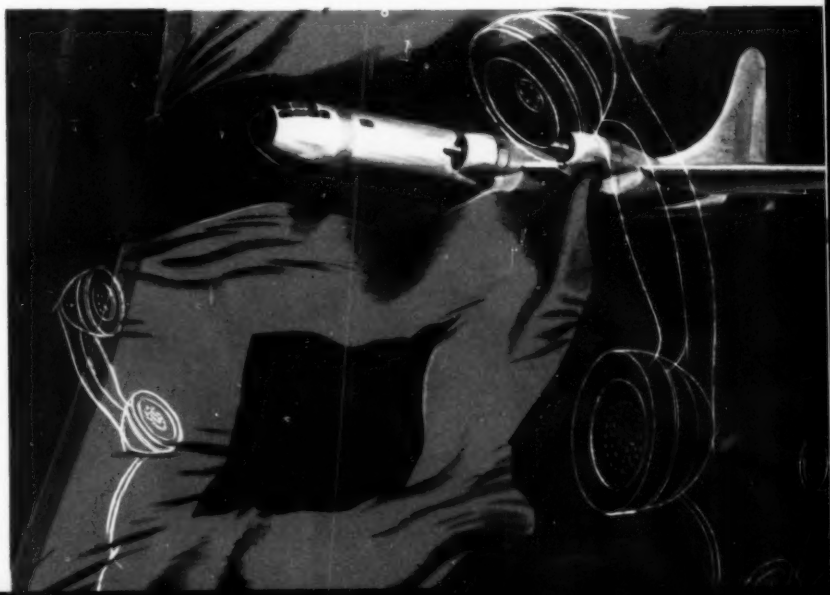
"*The numbers game*" – or maybe it is just "get your winning numbers here" that Howard Munce, president of the Society of Illustrators, has inscribed on the wall so carefully. Then comes the whitewash, and – pouf!

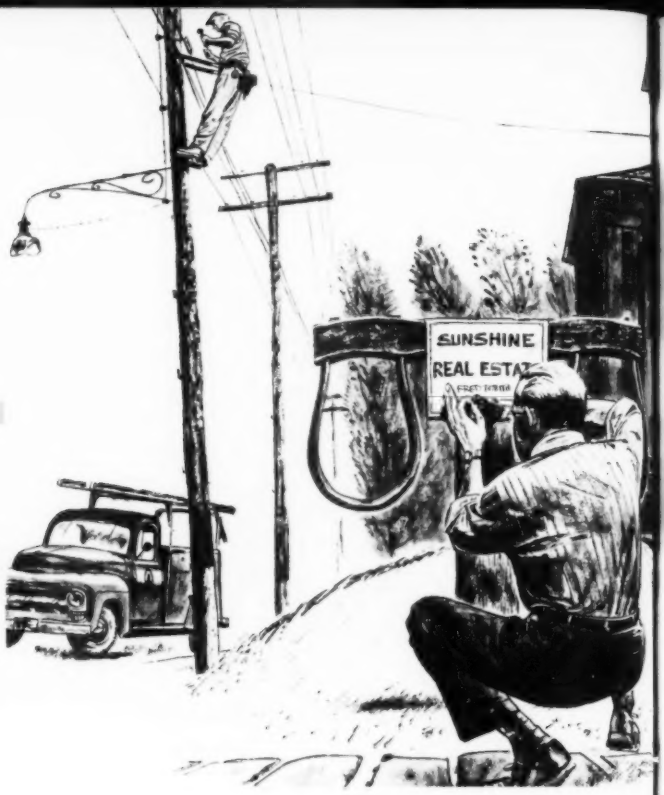


2A

"We're on our way right now, Doc!" Maurice Thomas, who draws this poignant moment, has a topic in common with this issue's first article – but a different viewpoint. Besides, Maurice includes angels and smoke signals–just as an extra precaution, probably.

WE 6-1212. The hurricane may have been baptized Carol, Edna, or whatever – but the telephone brings warning and protects property and saves lives. And Frank Lacano's design recalls the cover of this Magazine of just a year ago.



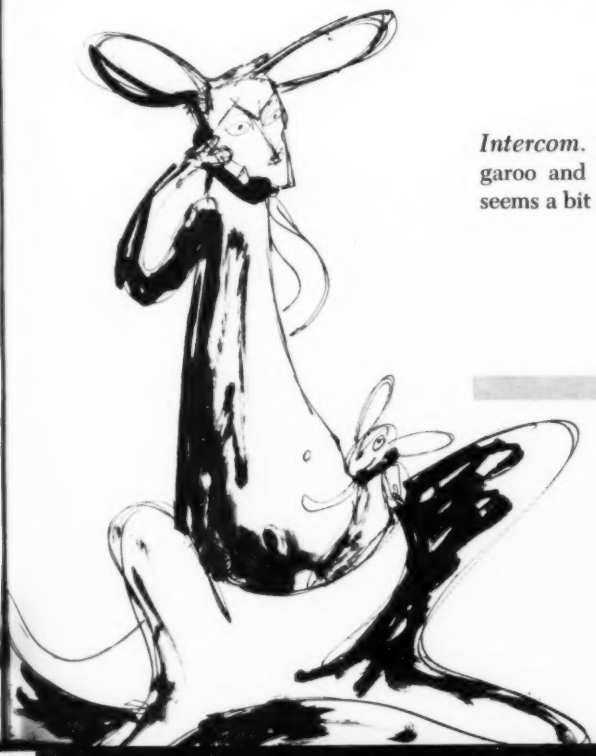


New frontiers. Real estate developments and telephone pole lines push on together into fresh fields and pastures new. But the ox yoke in Herb Mott's sketch tells us that others had been there long before.

Sweet Sixteen—more or less. But definitely teen-age and sweet, and with life made richer because so much of it is within reach of her voice. Artist: Frank Bensing.

XUM

While the city sleeps. At 23 minutes past some night hour, the sergeant hears the call for help – and sends help on its way. Thus does Woodi Ishmael's design epitomize the protection which he sees in every telephone.



Intercom. Marc Brody's idea of Mama Kangaroo and her little Joey chattering together seems a bit far-fetched. From Australia, in fact.

Earlier generation. This store may still exist, of course, just as David Stone shows it—archaic wall telephone and all. Even so, it is a relic of an era that is past.

Starting out right. Learning how to—and how not to—use the telephone is as important to kids nowadays as other lessons in getting along with the many tools of modern living. Artist: George Shelhase.

Public telephones, they call 'em. But just one small coin makes the booth and the instrument and all the facilities for the call as privately your own as if they had been built to serve your particular need then and there. Artist: Thornton Utz.

It's for you. Or so Marc Brody declares. The appropriate answer can only be "Who, me?"

XUM

The last word. Or is it? There may be such a thing, of course, but artist Austin Briggs doesn't make it too convincing.

"*Airport*" is what Al Moore calls his composition of poles and wires and clouds and birds. "For the birds" is another way of describing the millions of miles of perching space the telephone companies provide—free of charge.

XUM

FORTIETH ANNIVERSARY

On October 24, 1916, the bronze Genius of Electricity was placed atop the A. T. & T. headquarters building at 195 Broadway in New York. Standing on tiptoe, he stretches upward 24 feet from the ball on which he is poised, and 434 feet above the street. He was designed in 1914 by Miss Evelyn Beatrice Longman. Now gilded, he is commonly called Golden Boy. His view is to the North, and beyond him appear a bit of lower New York, a glimpse of the Hudson River, and the hills of New Jersey beyond.

Who's Who & What's What In This Issue

THE UNUSUAL DISTINCTION of having been successively treasurer and comptroller of the American Telephone and Telegraph Company is enjoyed by ALEXANDER L. STOTT, who contributes this issue's leading article. Starting in the Chief Statistician's Division of the Comptroller's Department in 1929, he transferred to the Long Lines Department a decade later, where he remained until 1942. By that time this country was at war, and he took three years out to serve in the Navy, where he attained the rank of commander. He rejoined A. T. & T. in 1945, in the Treasury Department, and moved over to the Comptroller's in 1949. There he stayed until 1952—when he became treasurer. A year later he assumed his present office of comptroller.

Alexander L. Stott

Howard E. Phillips

YEARS OF EXPERIENCE in building construction, and degrees in engineering and architectural engineering, preceded HOWARD PHILLIPS' service with the U. S. Army Engineers, in the Navy with the Seabees in North Africa, and as liaison officer in Washington, D. C. He joined the buildings group of A. T. & T.'s Department of Operation and Engineering in 1946, and in 1952 he went with Ohio Bell as building engineer. Two years later he returned to A. T. & T. as building engineer in O. & E. Mr. Phillips is a licensed architect, a licensed engineer, and a member of the American Institute of Architects and of the American Society of Civil Engineers.

BEFORE JOINING Long Lines in 1954, LAURENCE M. WHYTE was for five years a

XUM

Laurence M. Whyte
Left: George M. Foster

radio and TV newscaster in the Middle West. With Long Lines, he began as a writer on *Long Lines Magazine*—where, incidentally, he developed a warm interest in telephone history and particularly Alexander Graham Bell, and contributed a number of articles on those topics. Since last August he has been an information assistant in the news group of Long Lines' Information Department.

AFTER FOUR YEARS of newspaper work on San Francisco papers, GEORGE M. FOSTER joined the Commercial Department of The Pacific Telephone and Telegraph Company in 1926. Shortly thereafter he was assigned to public relations activities, and his service has been continuous in that field. His present title is Public Relations Director of the Pacific Company's Northern California Area.

THE PACIFIC COMPANY placed the first AMA for step-by-step equipment in service on a progressive cutover basis during August at the La Brea Avenue building, which serves approximately 61,000 subscribers in Los Angeles. Under the AMA system as applied to step-by-step, all charge information is recorded on the same type of paper tape used in the crossbar AMA system and is processed by machines. The step-by-step AMA system is comprised of certain elements from the automatic ticketing system together with other elements from crossbar AMA systems.

HEADQUARTERS SUMMARY

June 15 to Sept. 15, 1956.

DEVELOPMENT WORK is nearing completion on a new and expanded dial-selected intercommunicating arrangement to be known as the 6A Key Telephone System. This new system has a 36-station capacity and a number of new or improved service and operating features. It will eventually replace the present 9-station-capacity system and is scheduled for availability in the first half of 1957.

TWO NEW microwave systems, designated TJ and TH, are now under development at Bell Laboratories.

The TJ system is designed to meet the needs of the Companies for short-haul telephone and television services. A Laboratories field trial of the system is in progress in Michigan, and first deliveries are expected in the fourth quarter of 1957. The TJ system, which operates in the 11,000 megacycle range, will provide up to three working broad-band channels, each with a protection channel, in each direction on a route. Each broad-band channel will be capable of handling 96 or more telephone circuits for distances of 150 to 200 miles or one-color television channel for 100 miles.

The TH is a long-haul heavy-route system, operating in the 6000 megacycle range, which will supplement the present TD-2 system. Present schedules contemplate initial production of equipment about the middle of 1959. The TH system will have a maximum capacity of 13,320 telephone circuits, or 4680 telephone circuits plus 6 two-way television channels, on a fully-developed route. Auxiliary channels will provide alarm, control and short haul telephone circuits.

Since the TH system will operate in a different frequency band, it can be installed on the TD-2 routes, thus greatly increasing the circuit capacity on these routes, some of which are now operating at the full capacity of the TD-2 system.

ANOTHER MEMBER of the ON carrier telephone family took its place in the Bell System on August 6 when the first "ON over K" (ON/K) system was placed in commercial service between San Francisco and Sacramento by the Pacific Company. It was followed by a similar Northwestern Bell installation between Omaha and Lincoln. Both projects are on the trans-continental K carrier route.

The ON/K carrier system is a method of providing twelve additional telephone message circuits on two pairs of wires which are already equipped with a 12-channel K carrier system. It was designed to help fill the tremendous demand for short-haul intercity circuits over "K" routes where the K pairs are already completely equipped.

ON/K channels use the repeater stations and power supplies of the "K" route but are amplified in separate repeaters. At the terminals, the channelizing equipment is the same electrically and mechanically as other ON systems, which facilitates the extension of the circuits on a carrier basis to adjoining cable, open-wire or radio routes.

THE FIRST mobile telephone service furnished by the Bell System on frequencies in the 450-460 mc band was inaugurated last July when Illinois Bell placed three channels in commercial service in Chicago.

THE BELL TELEPHONE COMPANIES again earned for 1955 the National Safety Council's highest safety award, The Award of Honor. This award has been received for four of the last five years.

AMONG the steps pursued to attain the goal of reducing the over-all interval of providing central office equipment, one of the more recently completed items is that of standard equipment floor plans for No. 5 crossbar offices. Use of a standard equipment floor plan will allow savings in effort by both the building engineer and the architect and will assist in meeting the building-ready dates to correspond to the reduced interval for equipment. Of major importance, however, is the savings that would be reflected from reduced central office engineering effort required by the telephone company, and particularly by Western Electric, through the reduction in the amount of custom work.

THE NEW $572 million A. T. & T. stock offer to more than 1,435,000 share owners, in the ratio of one share at $100 par value for each ten shares held on September 14, established a new record in financing, as to both the amount and the number participating. Large as it is, this offer will take care of the Bell System's new money requirements for only six months.

In view of the high proportion (78%) of share owners who returned proxies for the special meeting and voted in favor of the increase in authorized capital that paved the way for this offer, the stock issue force of the Treasury Department has been built up to handle 750,000 purchases. This special force is made up of some 2,700 people, including both a day and a separate evening shift, and is advantageously housed in the 50 Varick Street building in proximity to the regular stock work – an arrangement made possible by the addition of new floors to the building early this year. To aid in the training and supervision of this force, 105 management employees have been borrowed from Associated Companies around the country.

A new small tabulating-card form of warrant is being used to reduce the big paper-handling job as much as possible; and an optional two-payment plan is being offered to help share owners finance their purchases. Since the rights do not expire until November 5, after payment of the October dividend, and since the final payment is not due until February 1, after payment of the January dividend, a share owner with an even number of rights for his purchase can cover 45 per cent of the cost of the new shares with these two dividends.

NEW RATES for high seas radiotelephone service–intended to lower and simplify them and to enlarge the zone in which minimum rates apply–went into effect on August 1. The cost of a three-minute call for ships at the most distant point from the caller's telephone has been cut from $12 to $9. In addition, the zone for minimum charges has been extended from 500 to 1,800 miles from the United States.

High seas service is currently provided for about 40 ocean liners and some 700 freighters, private yachts, trawlers, transports, etc. Thus far this year, six liners have joined the vessels receiving ship-to-shore telephone service. These include the *Empress of Britain* of the Canadian Pacific Steamships; the *M. S. Bergensfjord*, new flagship of the Norwegian American Line; the *Reina del Mar* of the Pacific Steamship Navigation Company; and the *Carinthia*, *Ivernia* and *Saxonia* of the Cunard Steamship Company.

A NEW Long Lines television operating center, specially designed to meet the stringent transmission requirements of color as well as black and white programs, went into service in Chicago in late June. Installations of the same type opened in July in Los Angeles and New York in September. Others are expected to be established at various points before the end of this year and during 1957.

The new Chicago center is a result of Bell System plans to provide more and better service for television broadcasters. In addition to keeping TV signals under constant check for possible picture impairment, telephone men must switch programs–changing the source, destination, and number of stations receiving a program according to customer orders. The new centers have switching equipment of new type, geared for accuracy and split-second timing.

Focal point of the equipment is a panel containing rows of push buttons and lights connected to outgoing lines. By pressing the proper buttons, an incoming circuit can be linked to any number of outgoing lines. Since these switches may be pre-set, they permit a double check for accuracy. When the moment comes for the actual program shift, a master button is pressed which automatically routes the program to all designated stations.

STARTING IN SEPTEMBER of this year, the first group of about 40 engineers from the System's Operating Companies began a training program on engineering concepts and applications of "new-art systems" (electronic switching, data processing, etc.) employing new solid-state devices such as transistors, diodes, ferro-electric crystals and ferro-magnetic devices. It is expected that a second group will start similar training a year from September.

The training course will be conducted by Bell Laboratories. Each group will spend about two years on the program. Part of the trainees' time will be spent in classroom instruction and part on rotational assignments associated with the various new projects. On completion of the course, the trainees will return to their Companies, where they will be available to participate in the application and operation of the new systems and instrumentalities.

The Blue Pencil

EVER meet a cunning statistic?

Probably not. They are intractable things at best, and hardly likely to appeal to one's warmer nature nor to respond to friendly advances. They are important, though, and Alexander Stott has done well to interpret so informally and understandably the figures gathered to report the past, interpret the present, and foresee . . . well, at least a trend. His article is based on studies made in the statistical division, which is under his direction, by William Hodgkinson, Jr., who is the demographic expert there.

The art editor can do things, however, about making Mr. Stott's yarn attractive—if not the statistics themselves. The sketches with which he has adorned those pages represent—some of them—amusing youngsters. And since human beings are, after all, the source of Mr. Stott's digits, decimals, and decisions (or, more properly, conclusions), perhaps we may associate the word *cunning* at least indirectly with a treatise on birth rates, life expectancy, and such-like cheerful —if numerical—discourse.

The thought is set forth even more explicitly on this issue's cover. There babies and telephones ride a rising scale together, to the assurance of the future of our country and the well-being of our business.

It isn't surprising, on reflection, that it took two talented artists to produce that cover. The pediatrician—baby specialist to you—is Thore Asplund, born in Sweden, educated artistically and otherwise in this country, well known artist and illustrator. The other man on the team is Vincent Trotta, well established in the world of art, who was recently given a "citation of esteem" for his portraits of members of the Far East Command. He was one of the eight artists flown to Korea to make them. A perhaps less aesthetic disinction is his position for 16 years as dean of the judges of the Miss America beauty pageant, and most recently of the Miss Universe beauty pageant.

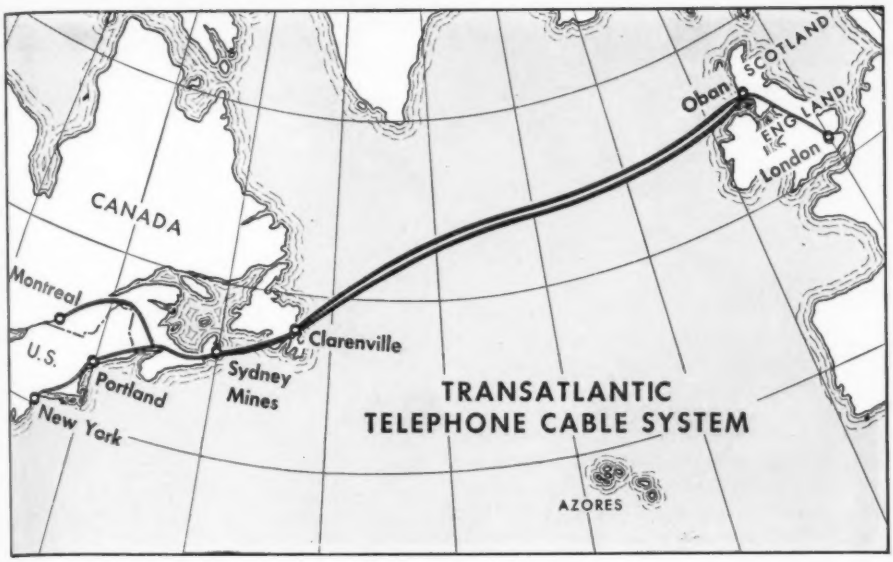
WE HAVE REPORTED from time to time on the hazard presented by wild life in the Arctic clime. Here's another tale, borrowed from our northern neighbor:

"A large brown bear not long ago set workmen on a secret mid-Canada radar station site mumbling and twitching. The Royal Canadian Air Force reported that the bear, which had been hanging around the construction camp for two weeks, was getting on the men's nerves. To protect wild life, the Government does not allow construction men to carry firearms. In one attempt to ease the tension, workmen placed a filled garbage can on thin ice about 100 yards from shore. Sure enough, the bear went out and crashed through the ice. But while the men were congratulating themselves the bear, estimated at 450 pounds, swam back under the ice and chased them to their tents. They tried to scare it off with a helicopter, but the bear squatted on the ice and watched the air show. The Air Force last reported the bear was still boss.

THE BIG international news of autumn is the transatlantic cable, now fully tested and proved and inaugurated and working just fine. We get a look occasionally at the British side of this vastly important undertaking through the *Telecommunications Journal* of the British Post Office, and there we found expressed recently an attitude which we consider pleasantly British. Or perhaps we should say Scottish, since the circumstance concerns the terminating of the eastern end of the cable, in Oban, Scotland.

As plans progressed, it became apparent that there was not enough room between the mountains which surround Oban and the waters of the Atlantic which confront it to construct a normal repeater station to receive the emerging cable. The problem was solved nicely by tunneling deep into the rock face, and the repeater station is now housed in a two-story cave, vaulted and lined, which is known locally as the Cathedral. Our interest lies in the concluding paragraph of the *Journal's* descriptive article, so confident, so serene as almost to imply "what's all the shoutin' for?"

"Even now the gashes torn in the country-



side at Oban are beginning to heal, grass is growing again over the disturbed ground, a new road leads up to a neat granite-faced building at the entrance to one of the adits and gradually the other signs of the minor invasion will fade. In fact, those concerned with the provision of these highly reliable communication systems feel that after the exciting events of the current year are over, transatlantic cable telephony will be so uneventful that some of the lost serenity will return to the mountains which shelter 'Transatlantic Terminal, Oban'."

OUR COLORFUL CONTEMPORARY, *195 Magazine,* has a corner—or section or department—labeled "editor's in-box," where we look first in each issue for a smile or an interesting note or just a bit of off-beat information. Whether there is an actual box we doubt, but we applaud the title. We have a blue pencil in our desk all right, but obviously it is no repository of editorial gems. One section in our file cabinet bears that label, however, and once in a while, like every editor, we forage around in it in an access of cleanliness and order. What we come up with is most likely to be something swiped quite a while ago from some other Bell editor's column—and often the better for having lain fallow.

Here's one:

"There's a telephone customer who wonders if telephone practices shouldn't be rewritten to agree with today's financial facts of life.

"Recently he dropped a dime in a pay station to make his call. Through one of those once-in-a-million chances, he didn't get his party but his dime was collected. The operator apologetically took his name and address and assured him he'd be reimbursed by the company.

"In due time an envelope arrived from the telephone company. Inside was a formal apology and attached to it was a shiny nickel."

ANOTHER was brought to mind by the reference, two or three pages earlier, to the Bell System's most recent safety record and award. Keeping safe isn't funny. But some of the words of caution seem so to us. For instance:

"The safest place to fall asleep at the wheel of a car is at a drive-in movie."

"Recreation is all right—if you don't try to wreck creation."

"Some cars have fluid drive, others just have a drip at the wheel."

"If your wife wants to drive, don't stand in her way."

WHETHER the outcome of Pentagon experience or of work in some other occupation requiring a lot of "routine," humorous—and generally rather cynical—definitions of the procedures involved in getting things accomplished in big organizations have been

passed from hand to hand and office to office so long and so often that a fresh one is a rarity and a treasure these days. This list struck us as gratifying on both counts. Or is it old stuff to you?

"*A program*—Any assignment that can't be completed with one telephone call.

"*Channels*—The trail left by inter-office memos.

"*Clarification*—To fill in the background with so many details that the foreground goes underground.

"*Consultant (or expert)*—Any ordinary man more than 50 miles from home.

"*Co-ordinator*—Man who has a desk between two expediters.

"*Give us the benefit of your present thinking*—We'll listen to what you have to say as long as it doesn't interfere with what we've already decided to do.

"*Informed source*—The guy who told the guy you just met.

"*Note and initial*—Let's spread the responsibility for this.

"*Point up the issue*—To expand one page to 15 pages.

"*Reliable source*—The guy you just met.

"*Re-orientation*—Getting used to working again.

"*Spearhead the issue*—You be the goat.

"*The issue is closed*—I'm tired of the whole affair.

"*To activate*—To make more carbons and add more names to the memo.

"*To expedite*—To confound confusion with commotion.

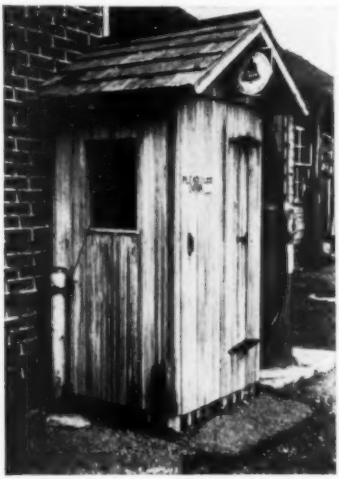
"*To give someone the picture*—A long, confused, and inaccurate statement to a newcomer.

"*To negotiate*—To seek a meeting of minds without a knocking together of heads.

"*Under active consideration*—We're looking in the files for it.

"*Under consideration*—Never heard of it.

"*Unimpeachable source*—The guy who started the rumor.

"*Will advise you in due course*—If we figure it out, we'll let you know."

As FOR telephone booths, let it not be said that we neglect any opportunity to report on the unusual. The example adjacent hereto exists in the land of the "Plain People" in Pennsylvania, familiar Bell sign and all, and the friend who was good enough to take the picture and bring it back to us says it works all right.